RETEC

Wells G&H
7.6
553624

REMEDIAL ACTION COMPLETION REPORT
DEBRIS, SLUDGE, AND MIXED-CONTAMINANT SOIL REMOVAL

SDMS DocID 553624

APPENDIX V
CLP DATA Packages

VOLUME 1
Compliance Sample Validation
Sample Delivery Group 18, Soil

Wildwood Property
Wells G & H Superfund Site
Woburn, MA

Prepared For:

BEATRICE COMPANY

Prepared By:

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RETEC Project No.: 3-0947-730

MARCH 1995

Compliance Sampling Validation

RETEC performed a remedial action at the Wells G & H Superfund site involving the removal and disposal of construction debris, debris soil, and sludge material. Samples were collected to determine compliance with the mandated clean-up levels for criteria site pollutants. Approximately ten percent of the total number of samples collected during the remedial action were analyzed for the target analyte (TAL) and target criteria (TCL) listed compounds presented in the U.S. EPA Contract Laboratory Program (CLP).

Samples selected for criteria, TAL, and TCL pollutants were analyzed following U.S. EPA CLP protocols. Volatile organics were analyzed by purge and trap using gas chromatography equipped with a mass spectrum detector (GC/MS). The method was modified to satisfy the low detection limits required by the project. The modification consisted of lowering the calibration range from 10-200 micrograms per liter (μg/l) to 1.0-25 μg/l. Semi-volatile organics were analyzed using GC/MS techniques, with gel permeation column (GPC) clean-up practices. The method was also modified to extend the contract required detection limit down to 30 micrograms per kilogram (μg/Kg). Pesticides and PCBs were prepared and analyzed using GC and electron capture detection (GC/ECD) techniques with GPC clean-up practices. All methods discussed in this paragraph followed the requirements specified in: *U.S. EPA CLP Statement of Work, Document #OLM01.2, 1/91.*

Selected metal analyses for criteria and TAL pollutants followed the methodology presented the U.S. EPA document: *CLP Statement of Work for Inorganic Analysis, document #ILM03.0 1/93.*

Final data was validated for accuracy by reviewing quality control procedures contained in each applicable method used. Quality control practices reviewed included:

- sample holding times;
- initial instrument calibrations;
- continuing instrument calibrations;
- surrogate compound recoveries;
- internal and external standard performance;
- field sample duplicates;
- trip and field blank results;
- method blank results; and
- matrix spike and matrix spike duplicates.

Sample results that were found to be out of quality control limits, for the referenced practices, were qualified following the procedures detailed in the U.S EPA Region I document: *Laboratory Data Validation - Functional Guidelines for Evaluating Organic (11/01/88) and Inorganic Analyses (2/01/89).*

As part of the validation process, data are qualified using letter codes, which have specific meanings notifying the data user that some data have additional uncertainties. The data reviewer can use the following qualifiers:

- U = The material was analyzed for, but not detected;
- J = The associated numerical value is an estimated quantity;
- R = The data are unusable, re-sampling and re-analysis is necessary for verification;
- UJ = The material was analyzed for, but not detected. The sample quantitation limit is an estimated quantity;
- B = The *organic* analyte is present in the associated blank as well as in the sample; and
- B = The associated *inorganic* numerical value is between the contract required detection limit and the method detection limit.

At the present time, data are qualified in three ways: as unusable; estimated; or presumptively present. When data are rejected, it doesn't mean that the analyte was not there, it means that the analytical test was not valid. Unusable data are flagged with an "R". Reasons for rejecting data are low surrogate recoveries, gross accedence of holding times, or poor calibration. When data are flagged as estimated, "J", it means that the data should be used with caution. The data could be significantly imprecise and that the reported value is an estimated value.

Compounds detected in blank samples can be used to qualify detected values in associated field samples as non-detect (U), if it meets the following criteria:

- the sample concentration is less than 10x the concentration of a detected common organic laboratory contaminant, i.e., acetone, methylene chloride, 2-butanone, or 2-bis(ethylhexyl)phthalate, or

- the sample concentration is less than 5x the concentration of the remaining field constituents in a blank.

Presented below are the validated results for samples analyzed during the remedial program conducted at the Wells G & H Superfund site in Woburn, Massachusetts.

Samples were analyzed by New England Testing Laboratory in Providence, Rhode Island. The data received was acceptable. However, on November 3, 1994, several files on the GC/MS volatile organic analysis run were lost. A routine back-up of the files by the laboratory found many of them to be damaged. Attempts made to recover the data failed. No sample files were lost, but quality control samples such as tuning standards, calibration checks and method blanks were. For the most part, critical output records were available in hard copy form for the data gaps. The hard copy forms allowed for the proper validation of the data.

Samples from the site contained high levels of pesticides. Many of the samples saturated the GC detector, nullifying initial analytical runs. However, in the interest of determining PCBs to EPA reporting requirements, all pesticide samples were analyzed at 1x dilution, prior to dilution for pesticide quantitation.

Attachment A to this memorandum contains all validation work sheets and calculations.

Volatile Organic Compounds

SAMPLE CODE	COMMENT
Field Blank -8/30	Qualify methylene chloride and acetone concentrations as non-detect (U) for method blank contamination. Qualify methylene chloride and acetone concentrations as estimated (J) for poor initial calibration results.
SL-04	Qualify methylene chloride, acetone, a 2-butanone concentrations as non-detect (U) for method blank contamination. Qualify methylene chloride and acetone concentrations as estimated (J) for poor initial calibration results.

SL-06/07	Qualify methylene chloride, acetone, a 2-butanone concentrations as non-detect (U) for method blank contamination. Qualify methylene chloride and acetone concentrations as estimated (J) for poor initial calibration results.
SL-08	Qualify methylene chloride and acetone concentrations as non-detect (U) for method blank contamination.
SL-08MS/MSD	Qualify methylene chloride and acetone concentrations as non-detect (U) for method blank contamination.
Field Blank - 10/4	Qualify methylene chloride and acetone concentrations as estimated (J) for poor initial calibration results.
1C-DL	Qualify methylene chloride and acetone concentrations as non-detect (U) for method blank contamination. Qualify methylene chloride and acetone concentrations as estimated (J) for poor continuing calibration results. Reject (R) xylene concentration for eluting past calibration curve concentration.
1D-DL	Qualify methylene chloride and acetone concentrations as non-detect (U) for field blank contamination. Qualify methylene chloride and acetone concentrations as estimated (J) for poor continuing calibration results.
2A-DL	Qualify methylene chloride and acetone concentrations as non-detect (U) for field blank contamination. Qualify methylene chloride and acetone concentrations as estimated (J) for poor continuing calibration results.
2D	Qualify methylene chloride and acetone concentrations as non-detect (U) for method blank contamination. Qualify toluene concentration as non-detect (U) for field blank contamination. Qualify methylene chloride and acetone concentrations as estimated (J) for poor continuing calibration results.

4C	Qualify methylene chloride and acetone concentrations as non-detect (U) for method blank contamination. Qualify methylene chloride and acetone concentrations as estimated (J) for poor continuing calibration results.
C	Qualify methylene chloride and acetone concentrations as non-detect (U) for method blank contamination. Qualify methylene chloride and acetone concentrations as estimated (J) for poor continuing calibration results.
H	Qualify methylene chloride and acetone concentrations as non-detect (U) for method blank contamination. Qualify methylene chloride and acetone concentrations as estimated (J) for poor continuing calibration results.
X	Qualify methylene chloride and acetone concentrations as non-detect (U) for method blank contamination. Qualify methylene chloride and acetone concentrations as estimated (J) for poor continuing calibration results.
D-DL	Qualify methylene chloride and acetone concentrations as estimated (J) for poor continuing calibration results.
Field Blank - 10/14	Qualify methylene chloride and acetone concentrations as estimated (J) for poor continuing calibration results.
Trip Blank - 10/14	Qualify methylene chloride and acetone concentrations as estimated (J) for poor continuing calibration results.
DP-7DL	Qualify trichloroethene as estimated (J) for poor MS/MSD results.

Semi-Volatile Organics

SAMPLE CODE	COMMENT
Field Blank-8/30	Qualify 4-chloroamiline, 3-nitroaniline, 2,4-dinirtophenol, and 3,3-dichlorobenzidine as estimated (UJ) for poor relative standard deviation on the initial calibration curve.
SL-01	Do not use. Failed internal standard area values. Use compounds quantified under sample code SL-01RE.
SL-03	Do not use. Failed internal standard area values. Use compounds quantified under sample code SL-03RE.
SL-04	Qualify all compound quantified by the internal standards chrysene-d_{12} and perylene-d_{12} as estimated (UJ) for failed internal standard area values.
SL-04RE	Do not use. Failed internal standard area values. Use compounds quantified under sample code SL-04.
SL-6/7	Qualify bis(2-ethylhexyl)phthalate and di-n-butylphthalate as non-detect (U) for method blank contamination.
SL-08	Do not use. Failed internal standard area values. Use compounds quantified under sample code SL-08RE.
SL-08RE	Qualify bis(2-ethylhexyl)phthalate and di-n-butylphthalate as non-detect (U) for method blank contamination.
SL-12	Do not use. Failed internal standard area values. Use compounds quantified under sample code SL-12RE.
SL-13RE	Do not use. Failed internal standard area values. Use compounds quantified under sample code SL-13.

SL-14RE	Do not use. Failed internal standard area values. Use compounds quantified under sample code SL-14.
SL-15RE	Do not use. Failed internal standard area values. Use compounds quantified under sample code SL-15.
SL-25RE	Do not use. Failed internal standard area values. Use compounds quantified under sample code SL-25.
Field Blank-10/4	Qualify 2-nitrophenol, 4-chloroanailine, 3-nitroaniline, 2,4-dinitrophenol, 4-nitrophenol, 4-nitroaniline, pentachlorophenol, carbazole, and di-n-butylphthalate as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.
1A	Qualify indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.
1B	Qualify indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.
1C	Qualify 4-chloroanailine, hexachlorobutadiene, 3-nitroaniline, 2,4-dinitrophenol, 4-nitroaniline, 4,6-dinitro-2-methylphenol, pentachlorophenol, carbazole, di-n-octylphthalate, indeno(1,2,3-cd)pyrene, dibenz(a,h)anthracene, and benzo(g,h,i)perylene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check. Qualify di-n-butylphthalate as non-detect (U) for method blank contamination.
1D	Qualify 4-chloroanailine, hexachlorobutadiene, 3-nitroaniline, 2,4-dinitrophenol, 4-nitroaniline, 4,6-dinitro-2-methylphenol, pentachlorophenol, carbazole, di-n-octylphthalate, indeno(1,2,3-cd)pyrene, dibenz(a,h)anthracene, and benzo(g,h,i)perylene as estimated (UJ) for failing the percent difference between the initial

	and continuing calibration check. Qualify di-n-butylphthalate as non-detect (U) for method blank contamination.
2A	Qualify 2-nitrophenol, 4-chloroanailine, 3-nitroaniline, 2,4-dinitrophenol, 4-nitrophenol, 4-nitroaniline, pentachlorophenol, and di-n-octylphthalate as estimated (UJ) for failing the percent difference between the initial and continuing calibration check. Qualify di-n-butylphthalate as non-detect (U) for method blank contamination.
2D	Qualify 2-nitrophenol, 4-chloroanailine, 3-nitroaniline, 2,4-dinitrophenol, 4-nitrophenol, 4-nitroaniline, pentachlorophenol, carbazole, and di-n-octylphthalate as estimated (UJ) for failing the percent difference between the initial and continuing calibration check. Qualify di-n-butylphthalate as non-detect (U) for method blank contamination.
2E	Qualify indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.
2F	Qualify indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.
3A	Qualify indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.
3B	Qualify indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.
4A	Qualify indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.

4B	Qualify indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.
4C	Qualify 2-nitrophenol, 4-chloroanailine, 3-nitroaniline, 2,4-dinitrophenol, 4-nitrophenol, 4-nitroaniline, pentachlorophenol, carbazole, and di-n-octylphthalate as estimated (UJ) for failing the percent difference between the initial and continuing calibration check. Qualify di-n-butylphthalate as non-detect (U) for method blank contamination.
5A	Qualify indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.
5B	Qualify indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.
C	Qualify 3-nitroaniline and 4-chloroaniline as estimated (UJ) for failing the relative standard deviation on the initial calibration curve and the percent difference on the continuing calibration check. Qualify di-n-butylphthalate and bis(2-ethylhexyl)phthalate as non-detect (U) for method blank contamination.
D	Qualify indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.
G	Qualify indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.

H	Qualify 3-nitroaniline and 4-chloroaniline as estimated (UJ) for failing the relative standard deviation on the initial calibration curve and the percent difference on the continuing calibration check. Qualify di-n-butylphthalate and bis(2-ethylhexyl)phthalate as non-detect (U) for method blank contamination.
SL-20	Qualify indeno(1,2,3-cd)pyrene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.
X	Qualify 3-nitroaniline and 4-chloroaniline as estimated (UJ) for failing the relative standard deviation on the initial calibration curve and the percent difference on the continuing calibration check. Qualify di-n-butylphthalate as non-detect (U) for method blank contamination.

Pesticides and PCBs

SAMPLE CODE	COMMENT
Field Blank - 8/30	Qualify alpha-BHC, delta-BHC, 4,4-DDT, and methoxychlor as estimated (UJ) for failing the relative standard deviation on the initial calibration. Qualify beta-BHC, endrin, and 4,4-DDT as estimated (UJ) for failing the percent difference on the performance evaluation mixture. Qualify endrin, 4,4-DDT, and methoxychlor for continuing calibration failure.
SL-05DL	Qualify 4,4-DDT as estimated (J) for failing the relative standard deviation on the initial calibration curve and the percent difference on the performance evaluation mixture.
SL-6/7	Qualify alpha-BHC, delta-BHC, gamma-BHC, dieldrin, 4,4-DDT, and methoxychlor as estimated (UJ) for failing the relative standard deviation on the initial calibration. Qualify endrin, methoxychlor, and 4,4-DDT as estimated (UJ) for failing the percent difference on the performance evaluation mixture. Qualify endrin ketone,

	endosulfan sulfate II, and endosulfan II as estimated (UJ) for continuing calibration failure.
SL-08DL	Qualify 4,4-DDT as estimated (UJ) for failing the relative standard deviation on the initial calibration.
SL-08B	Qualify alpha-BHC, delta-BHC, dieldrin, and methoxychlor as estimated (UJ) for failing the relative standard deviation on the initial calibration.
SL-08BDL	Qualify alpha-BHC, delta-BHC, 4,4-DDT, and methoxychlor as estimated (UJ) for failing the relative standard deviation on the initial calibration. Qualify endrin, beta-BHC, and 4,4-DDT as estimated (UJ) for failing the percent difference on the performance evaluation mixture. Qualify endrin ketone, endosulfan sulfate, heptachloroepoxide, 4,4-DDE, endrin aldehyde, and endosulfan II as estimated (UJ) for continuing calibration failure.
SL-10/11	Qualify 4,4-DDT as estimated (J) for failing surrogate recovery limits.
SL-12	Qualify arochlor 1260 as estimated (J) for failing surrogate recovery limits.
SL-12DL	Qualify alpha-chlordane as estimated (J) for failing TCX surrogate recovery times.
SL-13	Qualify alpha-chlordane and gamma-chlordane as estimated (J) for continuing calibration failure.
SL-15	Qualify 4,4-DDT as an estimated value (J) for failing surrogate recovery limits. Qualify alpha and gamma chlordane as estimated (J) values for failing continuing calibration requirements.
SL-25DL	Qualify alpha-chlordane and arochlor 1260 as estimated (J) values for poor TCX and PCB surrogate retention times.

Field Blank - 10/5	Qualify all compounds as estimated (UJ) for failing surrogate recovery limits.
A	Qualify 4,4-DDT as an estimated value (J) for failing the relative standard deviation for the initial calibration curve.
BDL	Qualify 4,4-DDT as an estimated value (J) for failing the relative standard deviation for the initial calibration curve.
CDL	Qualify 4,4-DDT as an estimated value (J) for failing the relative standard deviation for the initial calibration curve.
E	Correct typos on form I: alpha chlordane should be 1.7 ug/Kg JP. Gamma-chlordane should be 1.9 ug/Kg P.
HDL	Qualify all detected compounds as estimated values for failing the percent difference for field sample duplicates.
XDL	Qualify all detected compounds as estimated values for failing the percent difference for field sample duplicates.
15a-1	Qualify aroclors 1254 and 1260 as estimated values (J) for poor field duplicate precision.
15a-2	Qualify aroclors 1254 and 1260 as estimated values (J) for poor field duplicate precision.

Inorganics

SAMPLE CODE	COMMENT
1C	Qualify antimony as estimated (J) for failing matrix spike recovery. Qualify lead as estimated (J) for failing the percent difference on the duplicate injection. Qualify iron and magnesium as estimated (J) for failed serial dilution analysis on the ICP.

1D	Qualify antimony as estimated (J) for failing matrix spike recovery. Qualify lead as estimated (J) for failing the percent difference on the duplicate injection. Qualify iron, manganese, and magnesium as estimated (J) for failed serial dilution analysis on the ICP.
2A	Qualify antimony as estimated (J) for failing matrix spike recovery. Qualify lead as estimated (J) for failing the percent difference on the duplicate injection. Qualify iron, manganese, and magnesium as estimated (J) for failed serial dilution analysis on the ICP.
2D	Qualify antimony as estimated (J) for failing matrix spike recovery. Qualify lead as estimated (J) for failing the percent difference on the duplicate injection. Qualify iron, manganse, and magnesium as estimated (J) for failed serial dilution analysis on the ICP.
4C	Qualify antimony as estimated (J) for failing matrix spike recovery. Qualify lead as estimated (J) for failing the percent difference on the duplicate injection. Qualify iron, manganse, and magnesium as estimated (J) for failed serial dilution analysis on the ICP.
A	Qualify lead as an estimated value (J) for failing the matrix spike and duplicate injection precision limits.
B	Qualify lead as an estimated value (J) for failing the matrix spike and duplicate injection precision limits.
C	Qualify antimony, chromium, copper, and lead as estimated (J) for failing matrix spike recovery limits. Qualify copper, iron, and lead as estimated (J) for failing duplicate precision requirements.
G	Qualify lead as an estimated value (J) for failing the matrix spike and duplicate injection precision limits.
H	Qualify antimony, chromium, copper, and lead as estimated (J) for failing matrix spike recovery limits. Qualify copper, iron, and lead as estimated (J) for failing duplicate precision requirements.

SL-2	Qualify lead as an estimated value (J) for failing the matrix spike and duplicate injection precision limits.
SL-17/18	Qualify lead as an estimated value (J) for failing the matrix spike and duplicate injection precision limits.
SL-19	Qualify lead as an estimated value (J) for failing the matrix spike and duplicate injection precision limits.
SL-20	Qualify lead as an estimated value (J) for failing the matrix spike and duplicate injection precision limits.
X	Qualify antimony, chromium, copper, and lead as estimated (J) for failing matrix spike recovery limits. Qualify copper, iron, and lead as estimated (J) for failing duplicate precision requirements.

Attachment A

Validation Forms

RETEC

TO: Jamie Greacen

FROM: Richard Roat

DATE: January 27, 1995

Revise to report format,
Title
"Compliance Sampling Validation"

SUBJECT: Validation of Analytical Results of Samples Collected During the Soil and Debris Remedial Event at the Wells G & H Superfund site, Woburn, Massachusetts.

RETEC performed a remedial action at the Wells G & H Superfund site involving the removal and disposal of construction debris, debris soil, and sludge material. Samples were collected to determine compliance with the mandated clean-up levels for criteria site pollutants. Approximately ten percent of the total number of samples collected during the remedial action were analyzed for the target analyte (TAL) and target criteria (TCL) listed compounds presented in the U.S. EPA Contract Laboratory Program (CLP).

Samples selected for criteria, TAL, and TCL pollutants were analyzed following U.S. EPA CLP protocols. Volatile organics were analyzed by purge and trap using gas chromatography equipped with a mass spectrum detector (GC/MS). The method was modified to satisfy the low detection limits required by the project. The modification consisted of lowering the calibration range from 10-200 micrograms per liter (µg/l) to 1.0-25 µg/l. Semi-volatile organics were analyzed using GC/MS techniques, with gel permeation column (GPC) clean-up practices. The method was also modified to extend the contract required detection limit down to 30 micrograms per kilogram (µg/Kg). Pesticides and PCBs were prepared and analyzed using GC and electron capture detection (GC/ECD) techniques with GPC clean-up practices. All methods discussed in this paragraph followed the requirements specified in: *U.S. EPA CLP Statement of Work, Document #OLM01.2, 1/91.*

Selected metal analyses for criteria and TAL pollutants followed the methodology presented the U.S. EPA document: *CLP Statement of Work for Inorganic Analysis, document #ILM03.0 1/93.*

Final data was validated for accuracy by reviewing quality control procedures contained in each applicable method used. Quality control practices reviewed included:

- sample holding times;
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- internal and external standard performance;
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- trip and field blank results;
- method blank results; and
- matrix spike and matrix spike duplicates.

Sample results that were found to be out of quality control limits, for the referenced practices, were qualified following the procedures detailed in the U.S EPA Region I document: *Laboratory Data Validation - Functional Guidelines for Evaluating Organic (11/01/88) and Inorganic Analyses (2/01/89).*

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- UJ = The material was analyzed for, but not detected. The sample quantitation limit is an estimated quantity;
- B = The *organic* analyte is present in the associated blank as well as in the sample; and
- B = The associated *inorganic* numerical value is between the contract required detection limit and the method detection limit.

At the present time, data are qualified in three ways: as unusable; estimated; or presumptively present. When data are rejected, it doesn't mean that the analyte was not there, it means that the analytical test was not valid. Unusable data are flagged with an "R". Reasons for rejecting data are low surrogate recoveries, gross accedence of holding times, or poor calibration. When data are flagged as estimated, "J", it means that the data should be used with caution. The data could be significantly imprecise and that the reported value is an estimated value.

Compounds detected in blank samples can be used to qualify detected values in associated field samples as non-detect (U), if it meets the following criteria:

- the sample concentration is less than 10x the concentration of a detected common organic laboratory contaminant, i.e., acetone, methylene chloride, 2-butanone, or 2-bis(ethylhexyl)phthalate, or

- the sample concentration is less than 5x the concentration of the remaining field constituents in a blank.

Presented below are the validated results for samples analyzed during the remedial program conducted at the Wells G & H Superfund site in Woburn, Massachusetts.

Samples were analyzed by New England Testing Laboratory in Providence, Rhode Island. The data received was acceptable. However, on November 3, 1994, several files on the GC/MS volatile organic analysis run were lost. A routine back-up of the files by the laboratory found many of them to be damaged. Attempts made to recover the data failed. No sample files were lost, but quality control samples such as tuning standards, calibration checks and method blanks were. For the most part, critical output records were available in hard copy form for the data gaps. The hard copy forms allowed for the proper validation of the data.

Samples from the site contained high levels of pesticides. Many of the samples saturated the GC detector, nullifying initial analytical runs. However, in the interest of determining PCBs to ~~client~~ EPA ~~specific~~ reporting requirements, all pesticide samples were analyzed at 1x dilution, prior to dilution for pesticide quantitation.

Attachment A to this memorandum contains all validation work sheets and calculations.

Volatile Organic Compounds

SAMPLE CODE	COMMENT
Field Blank -8/30	Qualify methylene chloride and acetone concentrations as non-detect (U) for method blank contamination. Qualify methylene chloride and acetone concentrations as estimated (J) for poor initial calibration results.
SL-04	Qualify methylene chloride, acetone, a 2-butanone concentrations as non-detect (U) for method blank contamination. Qualify methylene chloride and acetone concentrations as estimated (J) for poor initial calibration results.
SL-06/07	Qualify methylene chloride, acetone, a 2-butanone concentrations as non-detect (U) for method blank contamination. Qualify methylene chloride and acetone concentrations as estimated (J) for poor initial calibration results.
SL-08	Qualify methylene chloride and acetone concentrations as non-detect (U) for method blank contamination.
SL-08MS/MSD	Qualify methylene chloride and acetone concentrations as non-detect (U) for method blank contamination.

Field Blank - 10/4	Qualify methylene chloride and acetone concentrations as estimated (J) for poor initial calibration results.
1C-DL	Qualify methylene chloride and acetone concentrations as non-detect (U) for method blank contamination. Qualify methylene chloride and acetone concentrations as estimated (J) for poor continuing calibration results. Reject (R) xylene concentration for eluting past calibration curve concentration.
1D-DL	Qualify methylene chloride and acetone concentrations as non-detect (U) for field blank contamination. Qualify methylene chloride and acetone concentrations as estimated (J) for poor continuing calibration results.
2A-DL	Qualify methylene chloride and acetone concentrations as non-detect (U) for field blank contamination. Qualify methylene chloride and acetone concentrations as estimated (J) for poor continuing calibration results.
2D	Qualify methylene chloride and acetone concentrations as non-detect (U) for method blank contamination. Qualify toluene concentration as non-detect (U) for field blank contamination. Qualify methylene chloride and acetone concentrations as estimated (J) for poor continuing calibration results.
4C	Qualify methylene chloride and acetone concentrations as non-detect (U) for method blank contamination. Qualify methylene chloride and acetone concentrations as estimated (J) for poor continuing calibration results.
C	Qualify methylene chloride and acetone concentrations as non-detect (U) for method blank contamination. Qualify methylene chloride and acetone concentrations as estimated (J) for poor continuing calibration results.
H	Qualify methylene chloride and acetone concentrations as non-detect (U) for method blank contamination. Qualify methylene chloride and acetone concentrations as estimated (J) for poor continuing calibration results.

X	Qualify methylene chloride and acetone concentrations as non-detect (U) for method blank contamination. Qualify methylene chloride and acetone concentrations as estimated (J) for poor continuing calibration results.
D-DL	Qualify methylene chloride and acetone concentrations as estimated (J) for poor continuing calibration results.
Field Blank - 10/14	Qualify methylene chloride and acetone concentrations as estimated (J) for poor continuing calibration results.
Trip Blank - 10/14	Qualify methylene chloride and acetone concentrations as estimated (J) for poor continuing calibration results.
DP-7DL	Qualify trichloroethene as estimated (J) for poor MS/MSD results.

Semi-Volatile Organics

SAMPLE CODE	COMMENT
Field Blank-8/30	Qualify 4-chloroamiline, 3-nitroaniline, 2,4-dinirtophenol, and 3,3-dichlorobenzidine as estimated (UJ) for poor relative standard deviation on the initial calibration curve.
SL-01	Do not use. Failed internal standard area values. Use compounds quantified under sample code SL-01RE.
SL-03	Do not use. Failed internal standard area values. Use compounds quantified under sample code SL-03RE.
SL-04	Qualify all compound quantified by the internal standards chrysene-d_{12} and perylene-d_{12} as estimated (UJ) for failed internal standard area values.
SL-04RE	Do not use. Failed internal standard area values. Use compounds quantified under sample code SL-04.
SL-6/7	Qualify bis(2-ethylhexyl)phthalate and di-n-butylphthalate as non-detect (U) for method blank contamination.
SL-08	Do not use. Failed internal standard area values. Use compounds quantified under sample code SL-08RE.

SL-08RE	Qualify bis(2-ethylhexyl)phthalate and di-n-butylphthalate as non-detect (U) for method blank contamination.
SL-12	Do not use. Failed internal standard area values. Use compounds quantified under sample code SL-12RE.
SL-13RE	Do not use. Failed internal standard area values. Use compounds quantified under sample code SL-13.
SL-14RE	Do not use. Failed internal standard area values. Use compounds quantified under sample code SL-14.
SL-15RE	Do not use. Failed internal standard area values. Use compounds quantified under sample code SL-15.
SL-25RE	Do not use. Failed internal standard area values. Use compounds quantified under sample code SL-25.
Field Blank-10/4	Qualify 2-nitrophenol, 4-chloroanailine, 3-nitroaniline, 2,4-dinitrophenol, 4-nitrophenol, 4-nitroaniline, pentachlorophenol, carbazole, and di-n-butylphthalate as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.
1A	Qualify indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.
1B	Qualify indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.

1C	Qualify 4-chloroanailine, hexachlorobutadiene, 3-nitroaniline, 2,4-dinitrophenol, 4-nitroaniline, 4,6-dinitro-2-methylphenol, pentachlorophenol, carbazole, di-n-octylphthalate, indeno(1,2,3-cd)pyrene, dibenz(a,h)anthracene, and benzo(g,h,i)perylene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check. Qualify di-n-butylphthalate as non-detect (U) for method blank contamination.
1D	Qualify 4-chloroanailine, hexachlorobutadiene, 3-nitroaniline, 2,4-dinitrophenol, 4-nitroaniline, 4,6-dinitro-2-methylphenol, pentachlorophenol, carbazole, di-n-octylphthalate, indeno(1,2,3-cd)pyrene, dibenz(a,h)anthracene, and benzo(g,h,i)perylene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check. Qualify di-n-butylphthalate as non-detect (U) for method blank contamination.
2A	Qualify 2-nitrophenol, 4-chloroanailine, 3-nitroaniline, 2,4-dinitrophenol, 4-nitrophenol, 4-nitroaniline, pentachlorophenol, and di-n-octylphthalate as estimated (UJ) for failing the percent difference between the initial and continuing calibration check. Qualify di-n-butylphthalate as non-detect (U) for method blank contamination.
2D	Qualify 2-nitrophenol, 4-chloroanailine, 3-nitroaniline, 2,4-dinitrophenol, 4-nitrophenol, 4-nitroaniline, pentachlorophenol, carbazole, and di-n-octylphthalate as estimated (UJ) for failing the percent difference between the initial and continuing calibration check. Qualify di-n-butylphthalate as non-detect (U) for method blank contamination.
2E	Qualify indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.
2F	Qualify indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.
3A	Qualify indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.

3B	Qualify indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.
4A	Qualify indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.
4B	Qualify indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.
4C	Qualify 2-nitrophenol, 4-chloroanailine, 3-nitroaniline, 2,4-dinitrophenol, 4-nitrophenol, 4-nitroaniline, pentachlorophenol, carbazole, and di-n-octylphthalate as estimated (UJ) for failing the percent difference between the initial and continuing calibration check. Qualify di-n-butylphthalate as non-detect (U) for method blank contamination.
5A	Qualify indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.
5B	Qualify indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.
C	Qualify 3-nitroaniline and 4-chloroaniline as estimated (UJ) for failing the relative standard deviation on the initial calibration curve and the percent difference on the continuing calibration check. Qualify di-n-butylphthalate and bis(2-ethylhexyl)phthalate as non-detect (U) for method blank contamination.
D	Qualify indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.
G	Qualify indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.

H	Qualify 3-nitroaniline and 4-chloroaniline as estimated (UJ) for failing the relative standard deviation on the initial calibration curve and the percent difference on the continuing calibration check. Qualify di-n-butylphthalate and bis(2-ethylhexyl)phthalate as non-detect (U) for method blank contamination.
SL-20	Qualify indeno(1,2,3-cd)pyrene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.
X	Qualify 3-nitroaniline and 4-chloroaniline as estimated (UJ) for failing the relative standard deviation on the initial calibration curve and the percent difference on the continuing calibration check. Qualify di-n-butylphthalate as non-detect (U) for method blank contamination.

Pesticides and PCBs

SAMPLE CODE	COMMENT
Field Blank - 8/30	Qualify alpha-BHC, delta-BHC, 4,4-DDT, and methoxychlor as estimated (UJ) for failing the relative standard deviation on the initial calibration. Qualify beta-BHC, endrin, and 4,4-DDT as estimated (UJ) for failing the percent difference on the performance evaluation mixture. Qualify endrin, 4,4-DDT, and methoxychlor for continuing calibration failure.
SL-05DL	Qualify 4,4-DDT as estimated (J) for failing the relative standard deviation on the initial calibration curve and the percent difference on the performance evaluation mixture.
SL-6/7	Qualify alpha-BHC, delta-BHC, gamma-BHC, dieldrin, 4,4-DDT, and methoxychlor as estimated (UJ) for failing the relative standard deviation on the initial calibration. Qualify endrin, methoxychlor, and 4,4-DDT as estimated (UJ) for failing the percent difference on the performance evaluation mixture. Qualify endrin ketone, endosulfan sulfate II, and endosulfan II as estimated (UJ) for continuing calibration failure.
SL-08DL	Qualify 4,4-DDT as estimated (UJ) for failing the relative standard deviation on the initial calibration.

SL-08B	Qualify alpha-BHC, delta-BHC, dieldrin, and methoxychlor as estimated (UJ) for failing the relative standard deviation on the initial calibration.
SL-08BDL	Qualify alpha-BHC, delta-BHC, 4,4-DDT, and methoxychlor as estimated (UJ) for failing the relative standard deviation on the initial calibration. Qualify endrin, beta-BHC, and 4,4-DDT as estimated (UJ) for failing the percent difference on the performance evaluation mixture. Qualify endrin ketone, endosulfan sulfate, heptachloroepoxide, 4,4-DDE, endrin aldehyde, and endosulfan II as estimated (UJ) for continuing calibration failure.
SL-10/11	Qualify 4,4-DDT as estimated (J) for failing surrogate recovery limits.
SL-12	Qualify arochlor 1260 as estimated (J) for failing surrogate recovery limits.
SL-12DL	Qualify alpha-chlordane as estimated (J) for failing TCX surrogate recovery times.
SL-13	Qualify alpha-chlordane and gamma-chlordane as estimated (J) for continuing calibration failure.
SL-15	Qualify 4,4-DDT as an estimated value (J) for failing surrogate recovery limits. Qualify alpha and gamma chlordane as estimated (J) values for failing continuing calibration requirements.
SL-25DL	Qualify alpha-chlordane and arochlor 1260 as estimated (J) values for poor TCX and PCB surrogate retention times.
Field Blank - 10/5	Qualify all compounds as estimated (UJ) for failing surrogate recovery limits.
A	Qualify 4,4-DDT as an estimated value (J) for failing the relative standard deviation for the initial calibration curve.
BDL	Qualify 4,4-DDT as an estimated value (J) for failing the relative standard deviation for the initial calibration curve.
CDL	Qualify 4,4-DDT as an estimated value (J) for failing the relative standard deviation for the initial calibration curve.

E	Correct typos on form I: alpha chlordane should be 1.7 ug/Kg JP. Gamma-chlordane should be 1.9 ug/Kg P.
HDL	Qualify all detected compounds as estimated values for failing the percent difference for field sample duplicates.
XDL	Qualify all detected compounds as estimated values for failing the percent difference for field sample duplicates.
15a-1	Qualify aroclors 1254 and 1260 as estimated values (J) for poor field duplicate precision.
15a-2	Qualify aroclors 1254 and 1260 as estimated values (J) for poor field duplicate precision.

Inorganics

SAMPLE CODE	COMMENT
1C	Qualify antimony as estimated (J) for failing matrix spike recovery. Qualify lead as estimated (J) for failing the percent difference on the duplicate injection. Qualify iron and magnesium as estimated (J) for failed serial dilution analysis on the ICP.
1D	Qualify antimony as estimated (J) for failing matrix spike recovery. Qualify lead as estimated (J) for failing the percent difference on the duplicate injection. Qualify iron, manganese, and magnesium as estimated (J) for failed serial dilution analysis on the ICP.
2A	Qualify antimony as estimated (J) for failing matrix spike recovery. Qualify lead as estimated (J) for failing the percent difference on the duplicate injection. Qualify iron, manganse, and magnesium as estimated (J) for failed serial dilution analysis on the ICP.
2D	Qualify antimony as estimated (J) for failing matrix spike recovery. Qualify lead as estimated (J) for failing the percent difference on the duplicate injection. Qualify iron, manganse, and magnesium as estimated (J) for failed serial dilution analysis on the ICP.
4C	Qualify antimony as estimated (J) for failing matrix spike recovery. Qualify lead as estimated (J) for failing the percent difference on the duplicate injection. Qualify iron, manganse, and magnesium as estimated (J) for failed serial dilution analysis on the ICP.

A	Qualify lead as an estimated value (J) for failing the matrix spike and duplicate injection precision limits.
B	Qualify lead as an estimated value (J) for failing the matrix spike and duplicate injection precision limits.
C	Qualify antimony, chromium, copper, and lead as estimated (J) for failing matrix spike recovery limits. Qualify copper, iron, and lead as estimated (J) for failing duplicate precision requirements.
G	Qualify lead as an estimated value (J) for failing the matrix spike and duplicate injection precision limits.
H	Qualify antimony, chromium, copper, and lead as estimated (J) for failing matrix spike recovery limits. Qualify copper, iron, and lead as estimated (J) for failing duplicate precision requirements.
SL-2	Qualify lead as an estimated value (J) for failing the matrix spike and duplicate injection precision limits.
SL-17/18	Qualify lead as an estimated value (J) for failing the matrix spike and duplicate injection precision limits.
SL-19	Qualify lead as an estimated value (J) for failing the matrix spike and duplicate injection precision limits.
SL-20	Qualify lead as an estimated value (J) for failing the matrix spike and duplicate injection precision limits.
X	Qualify antimony, chromium, copper, and lead as estimated (J) for failing matrix spike recovery limits. Qualify copper, iron, and lead as estimated (J) for failing duplicate precision requirements.

Attachment A

Validation Forms

REVIEW OF ORGANIC
CONTRACT LABORATORY PACKAGE

Site Name: ***Wells G & H Superfund Site***
Reference Number:

The hard copied data package received at RETEC has been reviewed and the quality assurance and performance data summarized. The data review included:

Case No.: ***NETL 18***	SAS No.:	Sample Dates: ***8/30 + 9/8/94***
SDG No.: ***18***	Matrix: ***soil***	Shipping Date: ***8/30 + 9/8/94***
No. of Samples: ***16***		Date Rec'd by Lab: ***8/31 + 9/9/94***

The CLP SOW for requires that specific analytical work be done and the general criteria used to determine the performance were based on the examination of:

- Data Completeness
- Holding Times
- GC/MS Tuning
- Calibrations
- Blanks
- Surrogate Recoveries
- Matrix Spike/Matrix Spike Dup.
- Field Duplicates
- Internal Std Performance
- Pest. Inst. Performance
- Compound Identification
- Compound Quantitation

Overall comments:

Data package was acceptable

Definition of qualifiers:

A = Acceptable data.
J = Approximate data due to quality control criteria.
R = Reject data due to quality control criteria.
U = Compound not detected.
UJ = Compound detection limit is approximate

Reviewer: Date:

I. DATA COMPLETENESS

Missing Information, Date Lab Contacted, Date Received:

Data package complete

II. HOLDING TIMES:

		VOA	BNA		Pest.	
Sample ID	Date Sampled	Date Anal.	Date Extr.	Date Anal.	Date Extr.	Date Anal.
FB	*8/30/94*	*9/07/94*	*9/01/94*	*9/05/94*	*9/01/94*	*9/13/94*
SL-01	*8/30/94*	*9/02/94*	*9/01/94*	*9/06/94*	*8/31/94*	*9/06/94*
SL03A	*8/30/94*	*9/02/94*	*9/01/94*	*9/08/94*	*8/31/94*	*9/05/94*
SL-03B	*8/30/94*	*9/02/94*				
SL-04	*8/30/94*	*9/04/94*	*9/01/94*	*9/05/94*	*8/31/94*	*9/05/94*
SL-05	*8/30/94*	*9/07/94*	*9/01/94*	*9/09/94*	*8/31/94*	*9/05/94*
SL-6/7	*8/30/94*	*9/04/94*	*9/01/94*	*9/06/94*	*8/31/94*	*9/06/94*
SL-08	*8/30/94*	*9/04/94*	*9/01/94*	*9/06/94*	*8/31/94*	*9/06/94*
SL-10/11	*8/30/94*	*9/02/94*	*9/01/94*	*9/09/94*	*8/31/94*	*9/06/94*
SL-12	*8/30/94*	*9/02/94*	*9/01/94*	*9/06/94*	*8/31/94*	*9/13/94*
SL-13	*8/30/94*	*9/02/94*	*9/01/94*	*9/08/94*	*8/31/94*	*9/13/94*
SL-14	*8/30/94*	*9/07/94*	*9/01/94*	*9/08/94*	*8/31/94*	*9/06/94*
SL-15	*8/30/94*	*9/02/94*	*9/01/94*	*9/08/94*	*8/31/94*	*9/13/94*
SL-25	*8/30/94*	*9/02/94*	*9/01/94*	*9/08/94*	*8/31/94*	*9/13/94*
TB	*8/30/94*	*9/07/94*				

VOA:
- Unpreserved: aromatics within 7 days, non-aromatics within 14 days of sample collection.
- Preserved: Both within 14 days of sample collection.
- Soils: Both within 10 days of sample collection.

BNA & Pest:
- Extracted within 7 days, analyzed within 40 days, soils and water.

Action: If holding times are exceeded all positive results are estimates (J) and non-detects are estimated (UJ). If holding times are grossly exceeded then data unusable (R).

III. GC/MS TUNING (Form 5B)

The DFTPP performance results for semi-volatile analysis were reviewed and found to be within the specified criteria (page D-40/SV).

If no, samples affected:

Tuning passed all SVOC QC criteria

Calculations:

The BFB performance results for volatile organic analysis were reviewed and found to be within the specified criteria (page D-25/VOA) Form 5A.

If no, samples affected:

Tuning passed all VOC criteria

Calculations:

IVA. VOLATILE CALIBRATION VERIFICATION (Form 6A, 7A)

Date of Initial Calibration: *8/30 + 8/31/94*
Dates of Continuing Calibration: *9/02, 9/04 + 9/07/94*
Instrument ID: *MACH 1*
Matrix/Level: *Soil/low*

Date	Criteria Out RF, %RSD, %D	Compound (value)
8/30	*RSD*	*methylene chloride (35.1)* *acetone (69.9)* *2-butanone (37)*
8/31	*RSD*	*methylene chloride (33)* *acetone (71)*
9/02	*D*	*methylene chloride (288)* *acetone (352)* *2-butanone (56)* *2-hexanone (29)*
9/04	*D*	*methylene chloride (78.1)* *acetone (125)*
9/7	*D*	*methylene chloride (456)* *acetone (202)*

Calculations:

Initial calibration uses 5 concentrations.
All Avg. RF's and RF's must be >0.05; if <0.05, mark positive results (J) and non-detects (R) (page D-27/VOA).
All %D's must be <25%; if >25% mark detects (J) and non-detects (UJ)
Some compounds must meet RRF of 0.01 (page D-28/VOA).

IVB. SEMI-VOLATILE CALIBRATION VERIFICATION (Form 6B, 7B)

Date of Initial Calibration: ***9/5/94***
Dates of Continuing Calibration: ***9/5, 9/5, 9/9 + 9/13/94***
Instrument ID:
Matrix/Level: ***Soil/low***

Date	Criteria Out RF, %RSD, %D	Compound (value)
9/5	*RF*	*2,4-dinitrophenol (0.03)*
	RSD	*4-chloroaniline (43)*
		3-nitroaniline (66)
		2,4-dinitrophenol (38)
		3,3-dichlorobenzidine (35)
	D	*2,4-dinitrophenol (28)*
9/13	*D*	*indeno(1,2,3-cd)pyrene (26)*
		2-fluorobiphenyl (29)

Calculations:

All Avg. RF's and RF's must be >0.05; if <0.05, mark positive results (J) and non-detects (R) page D-34/SV.
All %RSD's must be <30%; if >30% mark detects (J) and non-detects (UJ) if <50%
All %D's must be <25%; if >25% mark detects (J) and non-detects (UJ)
Tables for RRF, %D, and %RPD on pages D-46,47/SV.

V. BLANK ANALYSIS RESULTS

Laboratory Blanks:

Date	Lab ID	Matrix	Compound	Concentration
	VBLK02	*soil*	*methylene chloride*	*5.6 ug/Kg*
			acetone	*6.3*
			2-butanone	*13.1*
			boric acid (TIC)	*7.7*
	VBLK03	*soil*	*methylene chloride*	*1.5*
			acetone	*1.3*
			hexane	*4.4*
	SBLKS1	*soil*	*di-n-butylphthalate*	*22*
			bis(2-ethylhexyl)phthalate	*28*

Equipment and Field Blanks:

Date	Lab ID	Matrix	Compound	Concentration

No contamination

If concentration < CRQL, report CRQL
If concentration > CRQL, but less than action level (5x or 10x), report as (U)
If concentration > than action level, report as (R)

VI. SURROGATE RECOVERIES (Form 2C, 2E)

Sample matrix:

	VOA			B/N				
Samples	TOL	BFB	DCF	NBZ	FBP	TPH	PHL	2FP	TBP
	Pass criteria			*Pass criteria*					

Calculations:

	Water	Soil	
TOL = Toluene-d_8	88-110	84-138	Page D-50/VOA
BFB = Bromofluorobenzene	86-115	59-113	
DCF = 1,2 Dichloroethane-d_4	76-114	70-121	
NBZ = Nitrobenzene-d_5	35-114	23-120	Page D-56/SV
FBP = 2-Flurobiphenyl	43-116	30-115	
TPH = Terphenyl-d_{14}	33-141	18-137	
PHL,2FP,TBP	60-150	60-150	

VII. FIELD DUPLICATE PRECISION

Sample matrix: *soil* Sample Nos.: *SL-25 and SL-12*

List compounds that do not meet the following RPD criteria:

- An RPD of <30% for water
- An RPD of <50% for soil

Fraction	Compound	Sample Conc.	Dup Conc.	RPD
VOCs passed criteria				
SVOC	*benzo(a)anthracene*	*310*	*117*	*90*
	chrysene	*644*	*533*	*19*
	benzo(b)fluoranthene	*482*	*473*	*2*
	benzo(k)fluoranthene	*206*	*182*	*12*
	benzo(a)pyrene	*326*	*234*	*33*
	indeno(1,2,3-cd)pyrene	*180*	*154*	*16*

If the results for any compound do not meet the RPD, then flag positive results as estimated (J).

VIII. INTERNAL STANDARD PERFORMANCE (Form 8A, 8B)

List the internal standard areas of samples that do not meet the criteria of +100% or -50% of the internal standard area on the continuing calibration standard.

Sample ID	Date	I.S. Out	I.S. Area/RT	Acceptable Range	Action

VOC passed criteria

SVOC passed criteria

Positive results are flagged with (J)
Non-detects are flagged with (UJ)
Page D-43, 51/SV
Page D-47/VOA

IX. MATRIX SPIKE/MATRIX SPIKE DUPLICATE (Form 3C)

Must be performed for each group of samples of a similar matrix following the frequency:

- Each case of 20 field samples
- Each 20 field samples in a case
- Each group of soil samples of a similar concentration.
- Each 14 calendar day period which field samples were received.

List the samples not within RPD:

Date	Sample No.	Compound	%REC	Limit

VOC passed criteria

SVOC passed criteria

If any recoveries <10%, flag positive results (J), flag non-detects (UJ). RPD for VOAs page D-50/VOA, SV on page D-57/SV, and Pest. on page D-58/pest.

X. PESTICIDE INSTRUMENT PERFORMANCE

List DDT retention times less than 12 minutes.

Standard ID	Date/Time	RT	Samples Affected	Actions

4,4-DDT retention times > 12 minutes

If retention time < 12 min., reexamine for good separation, if not flag affected compounds (R)

List compounds which are not within the established windows.

Compound	Date/Time	RT	RT Window	Samples Affected

Must be within 0.02 min. of the mean RT (page D-47/PEST)
If out of RT window and no peaks in expected RT window then its ok.
If out of RT window and peaks are in expected RT window, recalculate conc. using different STDs.

X. PESTICIDE INSTRUMENT PERFORMANCE (cont.) (Form 7D)

DDT and Endrin Degradation. List the standards which have a DDT or Endrin breakdown >20%.

Standard ID	DDT or Endrin	% Breakdown	Samples Affected
PEMO5	*endrin*	*50.7*	*DB1701 column - non affected*

Calculations:

If breakdown >20%, flag positive results (J). If DDT is not present but DDD or DDE are, flag (R). Flag all positive results for DDD and/or DDE (J).
If breakdown >20%, flag positive results (J). If Endrin is not present but endrin aldehyde and/or endrin ketone are, flag (R). Flag all positive results for E. aldehyde and/or E. ketone (J).

XI. SURROGATE RECOVERIES (Form 2F)

Sample matrix:

	Column 1		Column 2	
Samples	TCX	DCB	TCX	DCB

Surrogate recoveries passed criteria

Calculations:

	QC Limits
TCX = Tetrachloro-m-xylene	60-150
DCB = Decachlorobiphenyl	60-150

XII. PESTICIDE CALIBRATION (Form 6E)

Initial Calibration: Must be calibrated with 3 conc. Calibration factors on page D-41/pest. RSD on page D-43/pest. RSD ,15% for compounds on page D-43/pest.

List compounds which did not meet RSD <10% or 15%

Date	Compound	Mean	%RSD	Column	Samples Affected
	alpha-BHC		*23*	*DB1701*	
	alpha-BHC		*27*	*DB608*	
	delta-BHC		*24*	*DB608*	
	gamma-BHC		*21*	*DB608*	
	dieldrin		*21*	*DB608*	
	4,4-DDT		*34*	*DB608*	
	methoxychlor		*25*	*DB608*	

Calculations:

Flag all positive results (J)

Analytical Sequence (Form 8D):

Did the lab follow the correct sequence every 72 hours? If no, data may be affected.

Correct sequence followed

XIII. PESTICIDE CALIBRATION (Form 7D, 7E)

Continuing Calibration:

List the compounds which did not meet the %D of < 15% on quantitation or 20% on confirmation for continuing calibration.

Date	Compound	%D	Column	Sample Affected
	endosulfan	*44*	*DB1701*	*INDBM02*
	endrin aldehyde	*30*	*DB1701*	"
	endosulfan II	*33*	*DB1701*	*INDBM03*
	endosulfan sulfate	*37*	*DB1701*	"
	endrin aldehyde	*48*	*DB1701*	"
	endrin	*52*	*DB1701*	*INDAM04*
	decachlorobiphenyl	*48*	*DB1701*	*INDBM04*
	decachlorobiphenyl	*36*	*DB608*	*INDBM02*
	endosulfan sulfate II	*27*	*DB608*	*INDBM03*
	endosulfan II	*27*	*DB608*	"
	endrin ketone	*33*	*DB608*	"
	endrin	*29*	*DB608*	*INDAM04*
	4,4-DDT	*50*	*DB608*	"
	methoxychlor	*31*	*DB608*	"
	delta-BHC	*32*	*DB608*	*INDBM04*
	hepachloroepoxide	*26*	*DB608*	"
	4,4-DDE	*26*	*DB608*	"
	endosulfan II	*37*	*DB608*	"
	endosulfan sulfate	*42*	*DB608*	"
	endrin ketone	*56*	*DB608*	"
	endrin aldehyde	*32*	*DB608*	"
	alpha-chlordane	*37*	*DB608*	"
	gamma-chlordane	*49*	*DB608*	"

IX. GPC and Florisil Clean-Up (Form 9A, 9B)

List compounds which did not use florisil clean-up or surpassed validation criteria:

Date	Sample No.	Compound	%REC
	florisil	*endosulfan I*	*72*
		dieldrin	*54*
		4,4-DDT	*51*
		methoxychlor	*0*
		decachlorobiphenyl	*36*
	GPC	*4,4-DDT*	*72*

QC Limits on florisil %REC = 80-120%
QC Limits on GPC %REC = 80-110%
If %REC <80%, qualify positive results (J) and non-detects (UJ). If %REC = 0, then (R) qualify non-detects

XV. MATRIX SPIKE/MATRIX SPIKE DUPLICATE (Form 3F)

Must be performed for each group of samples of a similar matrix following the frequency:

- Each case of 20 field samples
- Each 20 field samples in a case
- Each group of soil samples of a similar concentration.
- Each 14 calendar day period which field samples were received.

List the samples not within RPD:

Date	Sample No.	Compound	%REC	Limit

SL-08B failed all criteria for matrix spike and matrix spike duplicate. High technical chlordane in sample contributed to matrix interferences. Chlordane levels were above added spiked concentrations.

XVI. SAMPLE QUANTITATION

VOA:

BNA:

PEST/PCB:

NEIL

SDG 18-1

Method blank VBLK01 = ND

VBLK02 MC = 5.6 2-butanone = 13.1
Acetone = 6.3 Boric Acid 7.7 (2.91 RT)

VBLK03 MC = 1.5 Hexane 4.4 (4.42 RT)
Acetone = 1.3

SBLK51 Di-n-butylphthalate 22J
bis(2-ethylhexyl)phthalate 28J

VOA

Surrogates – NC [illegible]

CALCULATIONS: SL01 $Toluene_{d8}$ = 104.41 %
Chlorobenzene = ISTD

$$\frac{415035 \times 50\ ug/L}{321311 \times 1.237} = \frac{52.21\ ug/L}{50.0\ ug/L\ STD} \times 100 = 104.42\ \%$$

SL-05 Bromofluorobenzene = 86.44 %
chlorbenzene = ISTD

$$\frac{349837 \times 50\ ug/L}{402219 \times 1.006} = \frac{43.22\ ug/L}{50\ ug/L} \times 100 = 86.45\ \%$$

Internal STDs VOAs

No TYPO's

Initial calibrations

① 8/30/94 1256 HRS instrument # 5972

RRFs > 0.05 RSDs > 25% RSDs > 25 = methylene chloride = 35.1
Calcs - 12RF $\bar{x}$ ok RSDs ok acetone = 69.9
2-butanone = 37

Benzene RRF_1 = 0.949

$$\frac{81997 \times 50 \text{ ug/L}}{432032 \times 1.0 \text{ ug/L}} = 0.949 \checkmark$$

chloroform RRF_5 = 4.034

$$\frac{17056 \times 5.0 \text{ ug/L}}{49854 \times 5.0 \text{ ug/L}} = 4.034 \checkmark$$

② 8/31 1407 MACH-01

RRFs > 0.05 RSDs > 25 = acetone @ 71
methelene C. @ 33

Calcs $\bar{X}$ RRFs = ok + RSDs

Toluene RRF_5 = 1.208

$$\frac{92836 \times 50 \text{ ug/L}}{768707 \times 5 \text{ ug/L}} = 1.208$$

ccals 9/2 @ 14:07 hrs

RRFs > 0.05
%D > 25% = methylene chloride 288
acetone 352
2-butanone 56
2-hexanone 29

RRF_{50} Trichloroethene = 0.380

$$\frac{284051 \quad 50 \text{ ug/L}}{747286 \quad 50 \text{ ug/L}} = 0.380$$

Ccal 9/4 1407 hrs

RRFs > 0.05
%D > 25% = methylene chloride 781
acetone 124 b

1,2-Dichloroethane = 0.971

$$RRF_{50} \quad \frac{230348 \times 50}{237297 \times 50} = 0.971$$

Ccal 9/7 1256 hrs

RRFs > 0.05
%D > 35% methylene chloride = 456%
acetone = 202

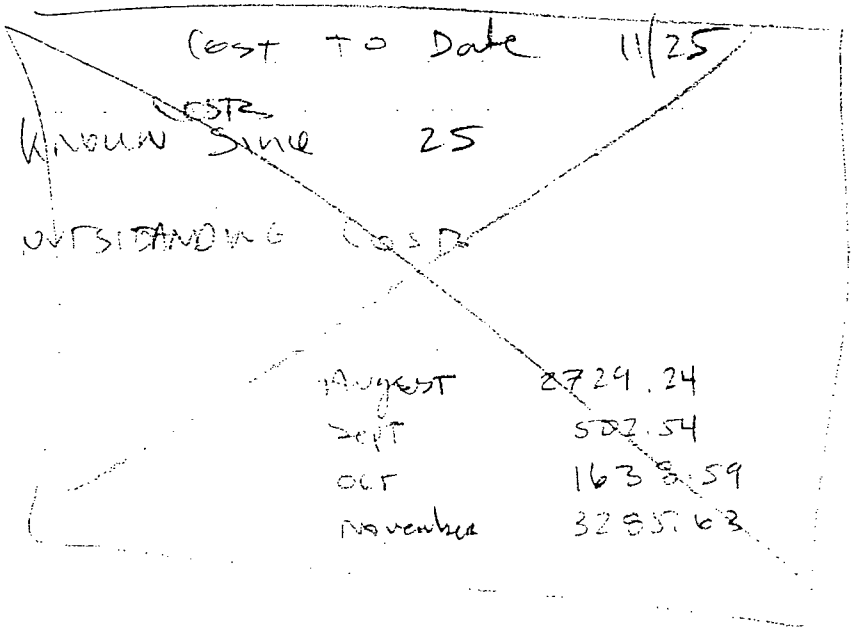
RRF_{50} Toluene 1.399

$$\frac{325880}{232994} = 1.3986$$

Tuning every 12 HRS

Target mass 50 eV = 16.2%

$$\frac{2012}{12400} \times 100 = 16.2$$



SVOA Surrogates

B/N SL-01 1,2-Dichlorobenzene$_{d_4}$ = 64

1,2-Dichlorbenzene$_{d_4}$ / 1,4-Dichlorobenzene

$$\frac{51612 \quad 20 \text{ ug/L}}{51875 \times .984} = \frac{31.97 \text{ ug/L}}{50 \text{ ug/L}} \times 100 = 64\%$$

ACID SL-04

Terphenyl$_{d14}$ = 111 %

$$\frac{152973 \times 20 \text{ ug/L}}{50623 \times 1.095} = \frac{55.70 \text{ ug/L}}{55 \text{ ug/L}} \times 100 = 111.4\ \%$$

Internal STDs

No typos

ICALS. 9/5/94 1150 hrs

RRFs > 0.05
RSDs < 30 %

2,4-Dinitrophenol 0.03
4-Chloroaniline 42.5
3-nitroaniline 66.2
2,4-Dinitrophenol 37.5
3,3-Dichlorobenzidine 35.1

% RSD cal ok RRF ok

RRF_{80} Chrysene = 0.940

$$\frac{235235 \times 20 \text{ ug/L}}{125124 \times 40 \text{ ug/L}} = .940$$

CAREN . Barbara JONES

CCAL 9/5/94 @ 1150 hrs

$RRF_5 > 0.05$
%Ds < 25%

RRF_{50} Naphthalene = 0.932 $\frac{292552 \times 20\ ug/L}{251120 \times 25\ ug/L} = 0.932$

%Ds ok

CCAL 9/5/94 @ 2333 hrs

$RRF_{50} > 0.05$
%Ds < 25% 2,4-Dimethylphenol 27.8%

RRF_{50} Nitrobenzene 0.388

$\frac{131070 \times 20\ ug/L}{270019 \times 25\ ug/L} = 0.388$

%Ds ok

9/9 @ 1651

$RRF_{50} > 0.05$ %Ds > 25 = Indeno(1,2,3-cd)pyrene

RRF_{50} Chrysene = $\frac{62391 \times 20\ ug/L}{56923 \times 25\ ug/L} = .876$

Reported 0.877

RRF_{50} Indeno(123-cd)pyrene = 0.803

$\frac{57255 \times 20}{57042 \times 25}$ 0.803

ccm 9/13 @ 1723 hrs

$RRF_{50} > 0.05$ %D > 25% = indeno (123 cd) pyrene 26 %
2 Fluorobiphenyl 29 %

2-Fluorobiphenyl = 1.182

$$\frac{57656 \times 20\ ug/L}{39027 \times 25\ ug/L} = 1.182$$

Tuning DFTPP

@ 9/5/14 11:24 hrs

m/e 441 = 76.75

$$\frac{8.656}{11.276} \times 100 = 76.75$$

SDG 18-1 NETL wells G+H

Pesticides

Surrogates

SL-6/7 TCX-1 = 91

FOUND $\frac{167815 \times 5000\ ml \times 2\ GPC}{2305425 \times 2\ ml \times 35.2 \times .83} = 12.45\ ug/kg$

ADDED $\frac{2\ ml \times 0.2}{(35.2)(.83)} \times 1000 = 13.7\ ug/kg$

$12.45\ ug/kg / 13.7\ ug/kg \times 100 = 90.8\ \%$

SL-14 DCB2 = 140%

FOUND $\frac{207195 \times 5.000\ ml \times 2\ GPC}{1844075 \times 35\ g \times .81 \times 2\ ml} = 19.82\ ug/kg$

ADDED $\frac{2\ ml \times 0.2}{35g \times .81} \times 1000 = 14.11$

$19.82 / 14.11 \times 100 = 140.4\ \%$

Calibration factors

medium mass obtained from Form 7E. Ratios on Form 6E

DB608 aldrin Low = 1660900.00

INDBL01 16608 / 0.01 ng = 1660800.00 ✓

DB1701 endrin high = 648056.25

207378 / 0.32 = 648056.25 ✓

mean + RSD calculated correctly.

RSDs > 20% DB1701 alpha-BHC = 23

DB608 alpha-BHC = 27

delta-BHC = 24

gamma-BHC = 21

dieldrin = 21

4,4-DDT = 34

methoxychlor = 25

DB1701 Aroclor 1242 = 130885 peak 1

26177 / 0.2 ng = 130885 ✓

DB608 Aroclor 1254 = 63020 peak 2

12604 / .2 = 63020 ✓

Percent resolution Form 6G

Resolutions > 60%

ENDRIN / DDT Breakdown

TYPO'S - NONE

PEM02 9/5/94 DB1701

44 DDT = 7.67 %

DDD = 17072 / 1348237.50 = 0.01266

$$\frac{0.01266}{0.165\ ng} \times 100 = 7.67\% \checkmark$$

%D > 25%

DB1701	PEM02	endrin 27%, methoxychlor 26
"	PEM03	beta-BHC 41, endrin 31
"	PEM04	beta-BHC 46, endrin 67 44 DDT 29 methoxychlor 26
DB608	PEM02	4,4-DDT 39
	PEM03	4,4-DDT 41
	PEM04	beta-BHC 29 endrin 44 44 DDT 50
	PEM05	beta BHC 36 44 DDT 89

PEM05 endrin breakdown 50.7 Combined = 52.7

Endrin Ketone 19470 / 901637.50 = 0.0216
Endrin Aldehyde 29899 / 877737.5 = 0.0329

0.0545 / 0.107 x 100 = 50.95 %

Cal Verification form 7E

1701	INDBM02	endosulfan 44	
		endrin aldehyde	30
1701	INDBM03	endosulfan II	33
		endosulfan sulfate	37
		endrin aldehyde	48
1701	INDAM04	endrin	52
	INDB04	decachlorobiphenyl	48
DB608	INDBM02	decachlorobiphenyl	36
DB608	INDBM03	endosulfan sulfate II	27
		endosulfan II	27
		endrin ketone	33
DB608	INDAM04	endrin 29	
		4,4-DDT 50	
		methoxychlor 31	
	INDBM04	delta-BHC 32	
		Heptachlorepoxide 26	
		4,4-DDE 26	
		endosulfan II 37	
		endosulfan sulfate 42	
		endrin ketone 56	
		endrin aldehyde 32	
		alpha chlordane 37	
		gamma chlordane 49	

Analytical Sequence Form 8D - ok

Florisil Clean-up

		Form 9A
Endosulfan I	72%	
Dieldrin	54%	
4,4-DDT	51%	
methoxychlor	0%	
Decachlorobiphenyl	36%	

4,4-DDT = 51%

Recovered $\frac{31141}{1523412.50}$: 0.020 ng / 2 µl = 0.01022 ng/µl

10.22 ng/ml / 20 ng/ml = 49% $\frac{100 \mu l}{1 ml}$ = 10.22 ng/ml

GPC Check Form 9B

4,4-DDT 72%

Recovered 217924 / 1523412.5 = 0.143 ng

0.143 ng / 2 µl x 1000 = 71.5 ng/ml

added 100 ng/ml

71.5 ng/ml / 100 ng/ml x 100 = 71.5%

Pesticide Identification Form 10A

FB	alpha chlordane	116%		
	Gamma chlordane	300%		
SL01	Gamma Chlordane	179		
	4,4-DDT	83		
SL03DL	alpha chlordane	61		
	Aroclor 1260	120		
SL-04	gamma chlordane	328		
	alpha chlordane	114		
	4,4-DDT	132		
	4-4,DDD	29		
SL05DL	gamma chlordane	76		
	alpha chlordane	95		
	4,4-DDT	319		
SL-6/7	alpha-chlordane	180		
	4,4-DDE	32		
	4,4-DDD	168		
SL-08DL	4-4DDT	433		
SL-08B	gamma-chlordane	43		
	alpha chlordane	38		
SL-12DL	gamma chlordane	93		
	alpha chlordane	81		
	4,4-DDT	158		
SL-13	gamma chlordane	251	Aroclor 1260	79
	alpha chlordane	360		
	4,4-DDT	339		

SL-14DL	4,4-DDT	154%
	Aroclor 1260	79
SL-15	gamma chlordane	97
	alpha chlordane	225
	4,4-DDT	399
SL-25DL	gamma chlordane	62
	alpha chlordane	40
	4,4-DDT	95
	Aroclor 1260	32

method blanks - all clean

Field blank run after sample SL-13

4,4 DDT $\frac{309.7 \times 5000 \times 2}{831062.5 \ 1,000 \text{ ml} \times 2} = 0.196 \ \mu g/L$

Qualifiers

Surrogates -	60-150	both >10	J
		either <10	J positive R Nondetects
		both >150	J positive
Cal Factors	RSD < 20	RSD > 20	J positives
			UJ Non detects
		RSD >90	R undetects
Cal verification			
PEM 05	endrin	50	J results
			R endrin if not Detected
	RPD > 25	J positives	UJ Negatives
FNDB FNDA		>25%	J positive UJ Negatives
		>90	R Negatives
Ftail	< 80	J Positives	UJ negatives
GPC	If '0'	R Negatives	
Identification	25-50	J	
	>1-90	JN	
	91	R	

FB UJ alpha + delta BHC, 44DDT and methoxychlor for RSDs >20 on Initial Calibration

UJ beta-BHC endrin and 44-DDT for PEM >25%

UJ endrin, 44DDT + methoxychlor for INDB03 failure

~~Reject alpha + gamma Chlordane for poor Identification Confirmance.~~

SL01 ~~44-DDT J Concentration for poor Florisil + GPC clean up~~

~~J 4,4-DDT + gamma-Chlordane for poor confirmation~~

SL03 Performance 1x run on sample for PCB on one column 1701, NOT run on 608. Diluted sample for Pest. Run Diluted sample on 1701 + 608. RAN PCBs on 608 Later with out LLP sequence. Qualified with "Y"

SL03DL ~~UJ 4,4 DDT for poor Florisil + GPC clean up~~

~~J Heptachlor 1260 for poor identification~~

SL-04 ~~J 4,4-DDT Poor Florisil GPC Cleanup~~

Interferances present. ~~J endosulfan I + dieldrin~~

~~Poor Florisil GPC results~~

SL05 Same as SL-03

SL-05DL J 4,4-DDT Poor Initial Cal RSD @ 34% PEM @ 41

~~Florisil GPC @ 51%~~

SL-6/7 UJ+J alpha, delta + gamma BHC, dieldrin, 4,4-DDT + methoxchlor for poor Initial CAL RSDs >20%

~~J~~ DDT Poor PEM UJ endrin + Methoxychlor Poor PEM

UJ endosulfan sulfate II, endosulfan II, endrin ketone for

Poor INBM. CCAL

~~UJ endosulfan I for poor florisil clean up 4,4 DDT for florisil~~ GPC

Partial Listing!

SL-08DL J 4,4-DDT poor ical, ~~Florisil + GPC~~

SL-08B full listing! UJ alpha+delta BHC, dieldrin + methoxychlor poor ical

UJ beta BHC endrin + 44 DDT for poor PEM

SL-08BDL UJ alpha-delta BHC, 4,4 DDT and methoxychlor for poor ICAL
UJ Beta-BHC, endrin 44 DDT For poor PEM results
UJ heptachlorepoxide 44 DDE endosulfan II endosulfan sulfate endrin ketone endrin aldehyde + gamma Chlordane poor INDBM04
~~UJ endosulfan I dieldrin Florisil GPC clean up~~

SL-10/11 J 44 DDT poor surrogates

SL-10/11 DL OK

SL-12 J Aroclor 1260 poor surrogates.

SL-12DL J alpha-chlordane poor TCX surrogate retention time
~~J 44 DDT Poor Florisil Cleanup~~

SL-13 J alpha + gamma Chlordane poor INDBM04
~~J 44 DDT Poor Florisil + GPC~~

SL-14 ~~J 44 DDT poor Florisil + GPC~~

32 P.O.
60 P.O.
32 P.O.
MA1519

SL-14DL ok

SL-14B ok

SL-15 J 44 DDT Poor surrogates ~~LPC + Florisil~~,
PEM
J alpha + Gamma chlordane Poor INDBM04

SL-25 ok

SL-25DL J alpha-chlordane Aroclor 1260 poor TLX retention times
~~J 44 DDT Poor Florisil GPC Heavy~~

Volatiles

FB U Qualify ML + acetone FOR MB contamination
J ~~Qual~~ Qualify ML acetone 2 butanone poor ical

SL-01 ok
SL03A ok
SL-03B ok
SL-04 U Qualify ML, acetone + MEK for MB contamination
J Qualify ML, acetone + for poor ICAL

SL-05 ok
SL-06/7 U Qualify ML, acetone + MEK for MB contamination
J Qualify ML, acetone for poor ICAL
SL-08 U Qualify ML + acetone for MB contamination
SL-08MS/MSD Qualify ML + acetone for MB Contamination

SL-10/11 ok
SL-12 ok
SL-13 ok
SL-14 ok
SL-15 ok
SL-25 ok
TB ok

Semi-vols

FB UJ 4 chloroaniline 3 nitroaniline, 24-Dinitrophen and 33-Dichlorobenzidine poor ICAL

SL-01 Dont use, internal standards ovr
SL-01RE ok

SL-03 - Dont use, internal stds ovr
SL-03RE - ok
SL-04 use, UJ J compounds Quantified by CRA + PRA INSTDs. U bis-2-ethylhexyl phthalate MB
SL-04RE - Dont use
SL-05 - ok
SL-6/7 U quality Di-n-butylphthalate, bis(2-ethylhexyl) phthalate MB contamination
SL-08 Dont use internal SDs
SL-08RE ok U Quality bis 2-ethylhexyl phthate MB contamination
SL-12 Dont use internal stds
SL-12RE ok
SL-12B ok
SL-13 ok
SL-13RE Dont use internal std
SL-14 ok
SL-14RE Dont use
SL-15 use
SL-15RE Dont use
SL-25 ok
SL-25RE Dont use

REVIEW OF INORGANIC
CONTRACT LABORATORY PACKAGE

Case Number:
Laboratory: ***NETL***
SDG: ***18***
SOW:
Completion Date: ***10/24/94***

Site Name: ***Wells G & H Superfund Site***
No. of Samples/Matrix: ***soil***
Reviewer: ***RETEC***
Reviewer's Name: ***R. Roat***

DATA ASSESSMENT SUMMARY

		ICP	AA	Hg	Cyanide
1.	Holding Times	O	O	O	O
2.	Calibrations	O	O	O	O
3.	Blanks	O	O	O	O
4.	ICS	O	O	O	O
5.	LCS	O	O	O	O
6.	Duplicate Analysis	O	O	O	O
7.	Matrix Spike	X	X	X	O
8.	Serial Dilution	O	O	-	-
9.	Overall Assessment	O	O	O	O

O = Data had no problems or qualified due to minor problems
M = Data qualified due to major problems
Z = Data unacceptable
X = Problems, but do not affect data

Action Items:

I. HOLDING TIMES

Sample ID	Date Sampled	Hg Analysis Date	Cyanide Analysis Date	Metal Analysis Date	Action
SL-6/7	*8/30/94*	*9/21/94*	*9/07/94*	*9/06/94*	
SL-04	*8/30/94*	*9/21/94*	*9/07/94*	*9/06/94*	
SL-08	*8/30/94*	*9/21/94*	*9/07/94*	*9/06/94*	
FB	*8/30/94*	*9/21/94*	*9/07/94*	*9/06/94*	
SL-10/11	*8/30/94*			*9/06/94*	
SL-25	*8/30/94*			*9/06/94*	
SL-14	*8/30/94*			*9/06/94*	
SL-03	*8/30/94*			*9/06/94*	
SL-15	*8/30/94*			*9/06/94*	
SL-12	*8/30/94*			*9/06/94*	
SL-13	*8/30/94*			*9/06/94*	
SL-01	*8/30/94*			*9/06/94*	
SL-05	*8/30/94*			*9/06/94*	

Metals - 180 days from collection preserved pH < 2
Mercury - 28 days from collection preserved pH < 2
Cyanide - 14 days from collection preserved pH > 12
If holding times are exceeded all positive results are estimated (J) and non-detects are estimated (UJ).

II. INSTRUMENT CALIBRATION (Form 2A)

1. Recovery Criteria - List the analytes which did not meet the percent recovery (%R) criteria for initial and continuing calibration.

Date	ICV/CCV	Analyte	%R	Action	Samples Affected

Passed all validation criteria

Action:

	Accept	Estimate (J)	Reject (R)
Metals:	90-110%	75-89%, 111-125%	<75%, >125%
Mercury:	80-120%	65-79%, 121-135%	<65%, >135%
Cyanide:	85-115%	70-84%, 116-130%	<70%, >130%

2. **Analytical Sequence**

A. Did the laboratory use the proper number of standards for calibration as described in the SOW? ***Yes***

B. Were calibrations performed at the beginning of each analysis? ***Yes***

C. Were calibration standards analyzed at the beginning of sample analysis and at a minimum frequency of ten percent or every two hours during analysis? ***Yes***

D. Were the correlation coefficient for the calibration curves for AA, Hg, and CN- >0.995? ***Yes***

E. Was a standard at 2xCRDL analyzed for all ICP analysis? ***Yes***

If No, the data may be affected. Use professional judgement to determine the severity of the effect and quality of the data.

III. BLANK ANALYSIS RESULTS (Form 3)

List the blank contamination.

1. Laboratory Blanks

DATE	ICB/CCB	PREP BL	ANALYTE	CONC.

Passed all validation criteria

2. **Equipment/Trip Blanks:** *Not applicable to soils*

DATE	EQUIP BL #	ANALYTE	CONC.

3. **Frequency Requirements**

A. Was a preparation blank analyzed for each matrix, for every 20 samples and for each digestion batch? *Yes*

B. Was a calibration blank run every 10 samples or every 2 hours? *Yes*

If No, the data may be affected. Use professional judgement to determine the severity of the effect and quality of the data.

III. BLANK ANALYSIS RESULTS (cont)

Actions: ***Passed validation criteria***

The action level for any analyte is equal to five times the highest concentration of that elements contamination in any blank. No positive results should be reported unless the concentration of the analyte exceeds the Action Level (AL).

1. When the concentration is greater than the IDL, but less than the AL, report the sample concentration detected with a U.

2. When the sample concentration is greater than the AL, report the sample concentration unqualified.

ELEMENT	MAX CONC.	AL UNITS

IV. ICP INTERFERENCE SAMPLE (Form 4)

1. Recovery Criteria

List any element in the ICS AB solution which did not meet the criteria for %R

	Percent Recovery		
	<50%	50-79%	>120%
Positive sample results	R	J	J
Non-detected samples	R	UJ	A

DATE	ELEMENT	%R	ACTION	SAMPLES AFFECTED

Passed all validation criteria

2. Frequency Requirements

A. Were Interference QC samples run at the beginning and end of each sample analysis run or a minimum of twice per eight hours? ***Yes***

If No, the data may be affected. Use professional judgement to determine the severity of the effect and quality of the data.

IV. ICP INTERFERENCE SAMPLE (cont)

3. Report the concentration of any element detected in the ICS solution > 2xIDL that should not be present.

ELEMENT	CONC. DETECTED IN THE ICS	CONC. OF INTERFERENTS IN THE ICS			
		AL	CA	FE	MG

Passed all validation criteria

Estimate the concentration produced by the interfering element in all affected samples.

SAMPLE AFFECTED	ELEMENT AFFECTED	SAMPLE CONC.	SAMPLE INTERFERANT				ESTIMATED INTERF.
			AL	CA	FE	MG	

Action:

1. The sample data can be accepted without qualification if the sample concentrations of Al, Ca,Fe, and Mg are less than 50% of their respective levels in the ICS solution.
2. Estimate (J) positive results for affected elements for samples with levels of >50% or more.
3. Reject (R) positive results if the reported concentration is due entirely to the interferant.
4. Estimate (UJ) non-detected results for which false negatives are suspect.

V. MATRIX SPIKE (Form 5A)

Sample Number: **SL-08MS**

1. Recovery Criteria

List the percent recoveries for analytes which did not meet the required criteria.

S - amount of spike added
SSR - spikes sample result
SR - sample result

ANALYTE	SSR	SR	S	%R	ACTION

Passed validation criteria

Actions:

1. If the sample concentration exceeds the spike concentration by a factor of 4 or more, no action is taken.
2. If any analyte does not meet the %R criteria, follow the actions stated below:

	Percent Recovery		
	<30%	30-74%	>125%
Positive Sample Results	J	J	J
Non-Detected Results	R	UJ	A

2. Frequency Criteria

A. Was a matrix spike prepared at the required frequency? ***Yes***

B. Was a post digestion spike analyzed for elements that did not meet required criteria for matrix spike recovery? ***Not required***

VI. LABORATORY DUPLICATES (Form 6)

List the concentration of any analyte not meeting the criteria for duplicate precision.

ELEMENT	CRDL	SAMPLE #	DUPLICATE #	RPD	ACTION
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper	*0.5*	*15*	*11.6*	*25.5*	*none*
Iron					
Lead					
Magnesium					
Manganese					
Mercury					
Nickel					
Potassium					
Selenium					
Silver					
Sodium					
Thallium					
Vanadium					
Zinc	*0.5*	*33*	*26.5*	*21.5*	*none*
Cyanide					

Action:

1. Estimate (J) positive results for elements which have a RPD >20% for water and >35% for soils.
2. If sample results are less than 5x the CRDL, estimate (J) positive results for elements whose absolute difference is >CRDL. If both samples are non-detected, the RPD is not calculated (NC).

VII. FIELD DUPLICATES

List the concentrations of all analytes in the field duplicate pair.

ELEMENT	CRDL	SAMPLE #	DUPLICATE #	RPD	ACTION
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead	*0.5*	*229*	*161*	*35*	*none*
Magnesium					
Manganese					
Mercury					
Nickel					
Potassium					
Selenium					
Silver					
Sodium					
Thallium					
Vanadium					
Zinc					
Cyanide					

Action:

1. Estimate (J) positive results for elements which have a RPD >30% for water and >50% for soils.
2. If sample results are less than 5x the CRDL, estimate (J) positive results for elements whose absolute difference is >2xCRDL. If both samples are non-detected, the RPD is not calculated (NC).

VIII. LABORATORY CONTROL SAMPLE (Form 7)

List any LCS recoveries not within the 80-120% criteria and the samples affected.

DATE	ELEMENT	%R	ACTION	SAMPLES AFFECTED

Passed all validation criteria

Action:

	Percent Recovery		
	<50%	51-79%	>120%
Positive Results	R	J	J
Non-Detected Results	R	UJ	A

2. Frequency Criteria

A. Was an LCS analyzed for every matrix, digestion batch and every 20 samples? *Yes*

IX. FURNACE AA ANALYSIS

1. Duplicate Precision

X Duplicate injections and one point analytical spikes were performed for all samples, duplicate injections agreed within +- 20%.

Duplicate injections and/or spikes were not performed for the following samples/elements:

Duplicate injections did not agree within +-20% for samples/elements:

IX. FURNACE AA ANALYSIS (cont.)

2. Post Digestion Spike Recoveries

X Spike recoveries met the 85-115% recovery criteria for all samples.

Spike recoveries did not meet the 85-115% criteria but did not require MSA for the following samples/elements:

X MSA was used to quantitate analytical results when contractually required.

X Correlation coefficients >0.995, accept results

Correlation coefficients <0.995, for sample numbers/elements:

Method of standard addition (MSA) was not performed as required for samples/elements:

Actions:

1. Estimate (J) positive results if duplicate injections are outside +-20% RSD or CV.
2. If the sample absorbance is <50% of post digestion spike absorbance the following actions should be applied:

	Percent Recovery		
	<10%	11-84%	>115%
Positive Result	J or R	J	J
Non-detected	R	UJ	A

3. Estimate (J) sample result if MSA was required and not performed.
4. Estimate (J) sample result if correlation coefficient was <0.995.

X. ICP SERIAL DILUTION ANALYSIS (Form 9)

Serial dilutions were performed for each matrix and results of the diluted sample analysis agreed within ten percent of the original undiluted analysis.

Serial dilutions were not performed for the following:

X Serial dilutions were performed, but analytical results did not agree within 10% for analyte concentrations greater than 50x the IDL before dilution.

Report all results that do not meet the required laboratory criteria for ICP dilution.

ELEMENT	IDL	50xIDL	SAMPLE #	DUPLICATE #	%D	ACTION
Aluminum						
Barium			*110*	*127*	*15*	*none*
Beryllium						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Magnesium						
Manganese						
Nickel						
Potassium						
Silver						
Sodium						
Vanadium						
Zinc						

Action:

1. Estimate (J) positive results if %D > 15.

XI. DETECTION LIMITS (Form 10)

1. Instrument Detection Limits

X Instrument detection limit results were present and found to be less than the contract required detection limits (CRDL).

IDLs were not included in the data package

IDLs were present, but the criteria was not met for the following elements:

2. **Reporting Requirements**

A. Were sample results on Form I reported down to the IDL not the CRDL for all analytes? *Yes*

B. Were sample results that were analyzed by ICP for Se, Tl, or Pb at least 5x IDL? *Yes*

C. Were sample weights, volumes, and dilutions taken into account when reporting detection limits on Form I? *Yes*

If No, the data may be affected. Use professional judgement to determine the severity of the effect and quality of the data.

XII. SAMPLE QUANTITATION

X Sample results fall within the linear range for ICP and within the calibrated range for all other parameters.

Sample results were beyond the linear range/calibration range of the instrument for the following elements:

1. Sample Calculation:

ICP:

AA Furnace:

Mercury:

Cyanide:

Metals NETL 180-1

		Sampled	Received	
TAL metals		8/30	9/31	9/8
	SL-67			
	SL-04			
	SL-09			SL-08B
	FB			SL-12B
LEAD	SL-10/11			SL-14B
	SL-25			
	SL-14			CNs on 9/7/94
	SL-03			Mercury on 9/21
	SL-15			ICP 8/30
	SL-12			= 8/30
	SL-13			
	SL-01			
	SL-05			

* Prepared Dates are wrong for ICP + F

ICAL

Passed QC recovery/Bound criteria
ICV performed at beginning, followed by ICB blank
CCV performed every 2 hrs or 10 samples with ICB

COLD VAPOR - Passed QC limits
Cyanide - Passed QC limits

CRDL	Form 2B	± 20%	
Antimony	153%		
Cobalt	11.7%	(11.7 ug/L)	check * page 0055 Form 2B
Beryllium	128%		marked wrong Cobalt
mercury	75%		should be 117.0 ppm

Blanks - Pass QC Criteria < CRDL
- IDLs are false negatives.

ICP Interference ICSA ICSB
Form 4 80-120 % except AL, CA, Fe, Mg
Pass QC Limits

Spike Sample 75-125%

Passed Criteria

Duplicate ±35 Rpd>1
Cadek 25.5 * Zinc 21.5 * ~~I [illegible] (J)~~

Lab Control Sample - Passed QC Limits

ICP Serial Dilution - Failed Barium 15%

* SL-04, SL-05 > should be qualified "*"

* "E" Qualifier for all Barium samples

Field blank Lead = 4 ug/L Calcium 138
Zinc 6
Sodium 697
Magnesium 10

Field dup 25+12

	SL-12	SL-25	RPD
	229	161	35

Qualifiers – None


SDC-19 Validation

REVIEW OF ORGANIC
CONTRACT LABORATORY PACKAGE

Site Name: ***Wells G & H Superfund Site***
Reference Number:

The hard copied data package received at RETEC has been reviewed and the quality assurance and performance data summarized. The data review included:

Case No.: ***E1005-02*** SAS No.:
SDG No.: ***19-1*** Matrix: *soil*
No. of Samples: ***19***

Sample Dates: ***10/4 + 10/11/94***
Shipping Date: ***10/4 + 10/11/94***
Date Rec'd by Lab: ***10/5 + 10/12/94***

The CLP SOW for requires that specific analytical work be done and the general criteria used to determine the performance were based on the examination of:

- Data Completeness
- Holding Times
- GC/MS Tuning
- Calibrations
- Blanks
- Surrogate Recoveries
- Matrix Spike/Matrix Spike Dup.
- Field Duplicates
- Internal Std Performance
- Pest. Inst. Performance
- Compound Identification
- Compound Quantitation

Overall comments:

Data package was acceptable

Definition of qualifiers:

A = Acceptable data.
J = Approximate data due to quality control criteria.
R = Reject data due to quality control criteria.
U = Compound not detected.
UJ = Compound detection limit is approximate

Reviewer: Date:

I. DATA COMPLETENESS

Missing Information, Date Lab Contacted, Date Received: ***Data package complete***

II. HOLDING TIMES:

		VOA	BNA		Pest.	
Sample ID	Date Sampled	Date Anal.	Date Extr.	Date Anal.	Date Extr.	Date Anal.
FB	10/04/94	10/15/94	10/06/94	10/07/94		
1C	10/04/94	10/15/94	10/05/94	10/06/94	10/05/94	10/07/94
1D	10/04/94	10/15/94	10/05/94	10/06/94	10/05/94	10/06/94
2A	10/04/94	10/15/94	10/05/94	10/07/94	10/05/94	10/07/94
2B	10/04/94		10/05/94	10/07/94	10/05/94	10/06/94
2C	10/04/94		10/05/94	10/06/94	10/05/94	10/06/94
2D	10/04/94	10/15/94	10/05/94	10/07/94	10/05/94	10/06/94
2E	10/04/94	10/15/94	10/05/94	10/06/94	10/05/94	10/07/94
2F	10/11/94		10/13/94	10/15/94	10/13/94	10/21/94
3A	10/11/94		10/12/94	10/15/94	10/13/94	10/21/94
3B	10/11/94		10/13/94	10/15/94	10/13/94	10/21/94
4A	10/04/94		10/05/94	10/06/94	10/05/94	10/06/94
4B	10/04/94		10/05/94	10/06/94	10/05/94	10/06/94
4C	10/04/94	10/15/94	10/05/94	10/07/94	10/05/94	10/07/94
5A	10/11/94		10/13/94	10/17/94	10/13/94	10/21/94
5B	10/11/94		10/13/94	10/17/94	10/13/94	10/21/94
1A	10/04/94		10/05/94	10/06/94	10/05/94	10/07/94
1B	10/04/94		10/05/94	10/06/94	10/05/94	10/06/94
TB	10/04/94	10/15/94				

VOA:
- Unpreserved: aromatics within 7 days, non-aromatics within 14 days of sample collection.
- Preserved: Both within 14 days of sample collection.
- Soils: Both within 10 days of sample collection.

BNA & Pest:
- Extracted within 7 days, analyzed within 40 days, soils and water.

Action: If holding times are exceeded all positive results are estimates (J) and non-detects are estimated (UJ). If holding times are grossly exceeded then data unusable (R).

III. GC/MS TUNING (Form 5B)

The DFTPP performance results for semi-volatile analysis were reviewed and found to be within the specified criteria (page D-40/SV).

If no, samples affected:

Tunning passed all SVOC QC criteria

Calculations:

The BFB performance results for volatile organic analysis were reviewed and found to be within the specified criteria (page D-25/VOA) Form 5A.

If no, samples affected:

Several files containing BFB information were lost during a memory error. No BFB exsists for the FB, TB, 2A, and 1D. Avidavits were submitted by the analysist indicating compliance with the lost BFB standards.

Calculations:

IVA. VOLATILE CALIBRATION VERIFICATION (Form 6A, 7A)

Date of Initial Calibration: *8/30 + 8/31/94*
Dates of Continuing Calibration: *10/14, 10/15/94*
Instrument ID: *MACH 1*
Matrix/Level: *Soil/low*

Date	Criteria Out RF, %RSD, %D	Compound (value)
8/30	*RSD*	*methylene chloride (35.1)*
		acetone (69.9)
		2-butanone (41)
8/31	*RSD*	*methylene chloride (45)*
		acetone (68)
10/14	*D*	*methylene chloride (685)*
		acetone (384)
		bromoform (36)
10/15	*D*	*methylene chloride (196)*
		acetone (387)

Calculations:

Initial calibration uses 5 concentrations.
All Avg. RF's and RF's must be >0.05; if <0.05, mark positive results (J) and non-detects (R) (page D-27/VOA).
All %D's must be <25%; if >25% mark detects (J) and non-detects (UJ)
Some compounds must meet RRF of 0.01 (page D-28/VOA).

IVB. SEMI-VOLATILE CALIBRATION VERIFICATION (Form 6B, 7B)

Date of Initial Calibration: *9/5/94*
Dates of Continuing Calibration: *10/6, 10/7, 10/14, + 10/17/94*
Instrument ID:
Matrix/Level: *Soil/low*

Date	Criteria Out RF, %RSD, %D	Compound (value)
9/5	*RF*	*2,4-dinitrophenol (0.03)*
	RSD	*4-chloroaniline (43)*
		3-notroaniline (66)
		2,4-dinitrophenol (38)
		3,3-dichlorobenzidine (35)
10/6	*RF*	*3-nitroaniline (0.02)*
	D	*4-chloroaniline (48)*
		hexachlorobutadine (31)
		3-nitroaniline (84)
		4-nitroaniline (59)
		4,6-dinitro-2-methylphenol (28)
		pentachlorophenol (44)
		carbazole (37)
10/7	*RF*	*3-nitroaniline (0.03)*
10/14	*D*	*indeno(1,2,3-cd)pyrene (38)*
		dibenz(a,h)anthracene (33)
		2-fluorobiphenyl (31)
10/17	*D*	*indeno(1,2,3-cd)pyrene (27)*
		dibenz(a,h)anthracene (31)
		terphenyl-d_{14} (26)

Calculations:

All Avg. RF's and RF's must be >0.05; if <0.05, mark positive results (J) and non-detects (R) page D-34/SV.
All %RSD's must be <30%; if >30% mark detects (J) and non-detects (UJ) if <50%
All %D's must be <25%; if >25% mark detects (J) and non-detects (UJ)
Tables for RRF, %D, and %RPD on pages D-46,47/SV.

V. BLANK ANALYSIS RESULTS

Laboratory Blanks:

Date	Lab ID	Matrix	Compound	Concentration
10/15/94	***VBLK02***	***soil***	***methylene chloride***	***9.5 ug/Kg***
			acetone	***6.6***
10/07/94	***SBLKS1***	***soil***	***di-n-butylphthalate***	***189***

Equipment and Field Blanks:

Date	Lab ID	Matrix	Compound	Concentration
10/15/94	FB	water	methylene chloride	7.7 ug/l
			acetone	1.1
			toluene	1.7
10/15/94	TB	water	methylene chloride	1.1
			acetone	0.8
			toluene	1.1

If concentration < CRQL, report CRQL
If concentration > CRQL, but less than action level (5x or 10x), report as (U)
If concentration > than action level, report as (R)

VI. SURROGATE RECOVERIES (Form 2C, 2E)

Sample matrix:

	VOA			B/N				
Samples	TOL	BFB	DCF	NBZ	FBP	TPH	PHL	2FP	TBP
	Pass criteria			*Pass criteria*					

Calculations:

	Water	Soil	
TOL = Toluene-d_8	88-110	84-138	Page D-50/VOA
BFB = Bromofluorobenzene	86-115	59-113	
DCF = 1,2 Dichloroethane-d_8	76-114	70-121	
NBZ = Nitrobenzene-d_5	35-114	23-120	Page D-56/SV
FBP = 2-Flurobiphenyl	43-116	30-115	
TPH = Terphenyl-d_{14}	33-141	18-137	
PHL,2FP,TBP	60-150	60-150	

VII. FIELD DUPLICATE PRECISION

Sample matrix: *soil* Sample Nos.: ***1D and 1C***

List compounds that do not meet the following RPD criteria:

- An RPD of $<30\%$ for water
- An RPD of $<50\%$ for soil

Fraction	Compound	Sample Conc.	Dup Conc.	RPD
VOCs	*1,2-dichloroethene*	*217*	*18,772*	*195*
	2-butanone	*11*	*ND*	
	trichloroethene	*93*	*4,910*	*192*
	tetrachloroethene	*73*	*2,430*	*188*
	ethylbenzene	*54*	*4,337*	*195*
	xylene	*117*	*12,750*	*196*
SVOC	*1,2-dichlorobenzene*	*526*	*627*	*17.5*
	phenanthrene	*63*	*ND*	
	fluoranthene	*43*	*ND*	
	bis(2-ethylhexyl)phthalate	*206*	*ND*	

If the results for any compound do not meet the RPD, then flag positive results as estimated (J).

VIII. INTERNAL STANDARD PERFORMANCE (Form 8A, 8B)

List the internal standard areas of samples that do not meet the criteria of +100% or -50% of the internal standard area on the continuing calibration standard.

Sample ID	Date	I.S. Out	I.S. Area/RT	Acceptable Range	Action

VOC passed criteria

SVOC passed criteria

Positive results are flagged with (J)
Non-detects are flagged with (UJ)
Page D-43, 51/SV
Page D-47/VOA

IX. MATRIX SPIKE/MATRIX SPIKE DUPLICATE (Form 3C)

Must be performed for each group of samples of a similar matrix following the frequency:

- Each case of 20 field samples
- Each 20 field samples in a case
- Each group of soil samples of a similar concentration.
- Each 14 calendar day period which field samples were received.

List the samples not within RPD:

Date	Sample No.	Compound	%REC	Limit

VOC passed criteria

SVOC passed criteria

If any recoveries < 10%, flag positive results (J), flag non-detects (UJ). RPD for VOAs page D-50/VOA, SV on page D-57/SV, and Pest. on page D-58/pest.

X. PESTICIDE INSTRUMENT PERFORMANCE

List DDT retention times less than 12 minutes.

Standard ID	Date/Time	RT	Samples Affected	Actions

All 4,4-DDT retension times > 12 minutes

If retention time < 12 min., reexamine for good separation, if not flag affected compounds (R)

List compounds which are not within the established windows.

Compound	Date/Time	RT	RT Window	Samples Affected

Must be within 0.02 min. of the mean RT (page D-47/PEST)
If out of RT window and no peaks in expected RT window then its ok.
If out of RT window and peaks are in expected RT window, recalculate conc. using different STDs.

X. PESTICIDE INSTRUMENT PERFORMANCE (cont.) (Form 7D)

DDT and Endrin Degradation. List the standards which have a DDT or Endrin breakdown >20%.

Standard ID	DDT or Endrin	% Breakdown	Samples Affected
PEM02	*endrin*	*35.5*	*DB1701 column*
PEM03	*endrin*	*36*	*DB1701*
PEM04	*endrin*	*78*	*DB1701*
PEM05	*4,4-DDT*	*33*	*DB1701*
PEM06	*endrin*	*37*	*DB1701*
PEM07	*endrin*	*32*	*DB1701*
PEM02	*endrin*	*33*	*DB608*
PEM03	*endrin*	*38*	*DB608*
PEM04	*endrin*	*31*	*DB608*
PEM05	*endrin*	*26*	*DB608*
PEM10	*endrin*	*24*	*DB608*

Calculations:

If breakdown >20%, flag positive results (J). If DDT is not present but DDD or DDE are, flag (R). Flag all positive results for DDD and/or DDE (J).

If breakdown >20%, flag positive results (J). If Endrin is not present but endrin aldehyde and/or endrin ketone are, flag (R). Flag all positive results for E. aldehyde and/or E. ketone (J).

XI. SURROGATE RECOVERIES (Form 2F)

Sample matrix:

	Column 1		Column 2	
Samples	TCX	DCB	TCX	DCB
FB		*7*	*25*	*28*

Calculations:

	QC Limits
TCX = Tetrachloro-m-xylene	60-150
DCB = Decachlorobiphenyl	60-150

XII. PESTICIDE CALIBRATION (Form 6E)

Initial Calibration: Must be calibrated with 3 conc. Calibration factors on page D-41/pest. RSD on page D-43/pest. RSD ,15% for compounds on page D-43/pest.

List compounds which did not meet RSD <10% or 15%

Date	Compound	Mean	%RSD	Column	Samples Affected
10/05/94	***alpha-BHC***		***23***	***DB1701***	
10/17/94	***alpha-BHC***		***24***	***DB1701***	
	4,4-DDD		***28***	***DB1701***	
10/05/94	***gamma-BHC***		***26***	***DB608***	
	alpha-BHC		***31***	***DB608***	
	delta-BHC		***22***	***DB608***	

Calculations:

Flag all positive results (J)

Analytical Sequence (Form 8D):

Did the lab follow the correct sequence every 72 hours? If no, data may be affected.

Correct sequence followed

XIII. PESTICIDE CALIBRATION (Form 7D, 7E)

Continuing Calibration:

List the compounds which did not meet the %D of <15% on quantitation or 20% on confirmation for continuing calibration.

Date	Compound	%D	Column	Sample Affected
	endrin	*72*	*DB1701*	*INDAM03*
	methoxychlor	*30*	*DB1701*	*"*
	4,4-DDT	*41*	*DB608*	*INDAM04*
	methoxychlor	*30*	*DB608*	*"*
	delta-BHC	*31*	*DB608*	*INDBM04*

IX. GPC and Florisil Clean-Up (Form 9A, 9B)

List compounds which did not use florisil clean-up or surpassed validation criteria:

Date	Sample No.	Compound	%REC
	florisil	*alpha-BHC*	*77*
		4,4-DDT	*51*
		TCX	*55*
		decachlorobiphenyl	*79*
	GPC	*4,4-DDT*	*117*
		gamma-BHC	*128*
		hepachlor	*126*
		aldrin	*125*
		dieldrin	*127*
		endrin	*206*

QC Limits on florisil %REC = 80-120%
QC Limits on GPC %REC = 80-110%
If %REC <80%, qualify positive results (J) and non-detects (UJ). If %REC = 0, then (R) qualify non-detects

XV. MATRIX SPIKE/MATRIX SPIKE DUPLICATE (Form 3F)

Must be performed for each group of samples of a similar matrix following the frequency:

- Each case of 20 field samples
- Each 20 field samples in a case
- Each group of soil samples of a similar concentration.
- Each 14 calendar day period which field samples were received.

List the samples not within RPD:

Date	Sample No.	Compound	%REC	Limit
	2D	*gamma-BHC*	*133*	*46-127*
		dieldrin	*139*	*31-134*
		endrin	*161*	*42-139*
		4,4-DDT	*149*	*23-134*

XVI. SAMPLE QUANTITATION

VOA:

BNA:

PEST/PCB:

NET-19-1 Wells G+H RD/2A

VOCs

Surrogates

4-4C BFB = 90% Chlorobenzene = ISTD

$\frac{350656 \times 50\ ug/L}{476413 \times 0.819} = 44.93\ ug/L \Big/ 50\ ug/L \times 100 = 99.8\%$

2-2D TOL = 118% chlorobenzene = ISTD

$\frac{597396 \times 50\ ug/L}{491300 \times 1.031} = 58.97 \Big/ 50 \times 100 = 117.9\%$

Internal Stds.
QC Passed
M TMPO's

ICALs 8/30/94
RRFs >0.05 RSD's < 30% methylene chloride 34.5
acetone 68
2-butanone 41

RSDs Cal + $\overline{RRFs}$ ok

RRF_{05} Toluene = 1.637 $\frac{386414 \times 5\ ug/L}{236005 \times 5\ ug/L} = 1.637$

Cal 8/31/94

RRFs > 0.05 RSDs < 30% methylene chloride 45
acetone 68

Calcs for RSDs + $\overline{RRF}$ ok

RRF_{50} 2-butanone = 0.527

$$\frac{141984 \times 50 \text{ ug/L}}{269644 \times 50 \text{ ug/L}} = 0.5265$$

CCAL 10/14 1256 hrs

RRFs > 0.05 %D < 25% methylene chloride 685
acetone 354
bromoform 36

%D cal ok

RRF_{05} methylene chloride = 22.895

$$\frac{835701 \times 5 \text{ ug/L}}{36501 \times 5 \text{ ug/L}} = 22.895$$

Ccal 10/15/94 1407 hrs

RRFs > 0.05 %D < 25% methylene chloride 196
acetone 397

RRF_{50} benzene = 0.749

$$\frac{474518 \times 50 \text{ ug/L}}{633572 \times 50 \text{ ug/L}} = 0.749$$

Tuning BFB only for cal curves

8/30

eV 175 = 65.7%

8152/12400 x100 = 65.7

Quantation.

4C acetone @ 5.0 ug/kg

$$\frac{5543 \cdot 50\ ng/ml \times 5\ ml}{17791 \times .342\ g \times .61 \times 3.375} = 4.95\ ng/g = 5\ ug/kg$$

SVOA

surrogates = Pass QL criteria
No TYPO's

aud MS-1D PHL = 67% Dichlorbenzene = ISTD

$$\frac{203999 \times 20 \text{ ug/ml}}{56476 \times 1.439} = 50.20 \text{ ug/ml} \Big/ 75 \text{ ug/ml} \times 100 = 66.9\%$$

base MS-4C FBP = 88% acenaphthened_{10} = ISTD

$$\frac{236637 \times 20 \text{ ug/ml}}{110171 \times 0.975} = 44.06 \text{ ug/ml} \Big/ 50 \text{ ug/ml} \times 100 = 88.1\%$$

Internal STDs.
NO TYPOs
Pass QL criteria

ICAL 9/5/94 11:50 hrs

RRFs > 0.05 2-4 Dinitrophenol 0.032 RRF_{20}

RSDs < 30% 4-chloroaniline 43%
3-nitroaniline 66%
2,4-Dinitrophenol 37
3,3'-Dichlorobenzidine 35

$\overline{RRF}$ + RSDs calculated correctly

RRF_{80} Pyrene 1.685 $\quad \frac{421706 \times 20 \times 2}{125124 \times 8.0} = 1.685$

CCAL 10/6/94 11:50 hrs

$RRF_{50} > 0.05$ 3-Nitroaniline 0.023
%RSDs < 25% 4-chloroaniline 48
hexachlorobutadine 31
2-nitroaniline 84
4-nitroaniline 59
4,6-Dinitro-2-methylphenol 28
Pentachlorophenol 44
Carbazole 37

RRF_{50} Fluorene 1.122 $\quad \frac{190806 \times 20 \times 2}{136004 \times 50} = 1.12$

%RSD's Calculated Correctly

CCAL 10/7/94 11:50 hrs

RRF_5 > 0.05 3-nitroaniline 0.035

RRF_{50} naphthalene = 0.813 $\quad \frac{226237 \times 20 \times 2}{222692 \times 50} = 0.813$

CCal 10/14/94 1745 hrs

RRF5 > 0.05 %D > 25 = Indeno(1,2,3-cd)pyrene = 38
Dibenz(a,h)anthracene = 33
2-Fluorobiphenyl = 31

RRF50 Chrysene = 0.892 $\frac{81333 \times 20 \times 2}{72964 \times 50} = .892$

CCAL 10/17/94 17:10 hrs

RRF5 > 0.05 %D Indeno(123cd)pyrene 27
Dibenz(a,h)anthracene 31
terphenyl d14 26

Benzo(a)pyrene = 0.909 $\frac{94681 \times 40}{83306 \times 50} = .909$

Tuning - Pass criteria

10/14/94 17:19 hrs

M/Z 441 = 74.34 11.234/15.112 = 74.34 %

Pesticides - SDG-19

Surrogates FB Failed on Column 2 TCX + DCB
Remaining OK

2E DCB2 = 393%

Found $\frac{645038 \times 10{,}000\,ml}{35.4\,g \times 0.79 \times 2\,ml \times 2051375} = 56.218$

added $\frac{2\,ml \times 0.2}{35.4 \times 0.79} \times 1000 = 14.30$

$56.218 / 14.30 \times 100 = 393\%$

4B TCX 1 = 112%

Found $\frac{295034 \times 10{,}000\,ml}{35.2\,g \times .78 \times 2\,ml \times 3281700} = 16.37$

added $\frac{2\,ml \times 0.2}{35.2 \times .79} \times 1000 = 14.56$

Recovered $16.37 / 14.56 \times 100 = 112\%$

Calibration factors medium mass obtained from form 7E

Ratios on form 6E

4,4-DDT HIGH DB1701 = 2446865.63

INDAH01 4,4-DDT = 783029 / 0.32 = 2446865.63 ✓

10/5/94 RSDs >20% Means + RSDs calculated ok
DB1701 alpha-BHC 23

10/17/94 RSDs >20 Calculations ok
DB1701 alpha-BHC = 24
4,4-DDD = 28

DB1701 LOW alpha-BHC = 3322100.00

33221 / 0.01 ng = 3322100.00

10/5/94 DB608 RSD's >20 are alpha-BHC 31
delta BHC 22
calculations ok gamma BHC 26

endrin medium = 988612.50

79088 / 0.08 = 988612.50

cal factors

DB608 11/1/94 RSD's < 20

Calculations ok

aldrin HIGH 4907431.25 785189 / 0.16 = 4907431.25

PCB cal Factors form 6F

aroclor 1242 DB1701 10/5/94

Peak 1 = 157405 31481 / 0.2 = 157405

DB608 10/20/94

aroclor 1260 Peak 2 = 94835

aroclor 1016+1260 canbe 18967 / .2 = 94835
Combined into one sample
Listed under 1016.

Resolution summary resolutions > 60 %

DDT / Endrin break-down RSD < 25%

1701 PEM01 - Pass
701 PEM02 - 44 DDT = 26 % RSD
endrin breakdown = 35.5 Combined = 39.9

PEM02 DB1701

endrin breakdown

endrin	133650 / 1123035	= 0.119
endrin aldehyde	30271 / 1467387.5	= 0.0206
endrin ketone	30692 / 2058087.50	= 0.0149

$$\frac{0.0206 + 0.0149}{0.119} \times 100 = 35.5$$

PEM03 DB1701

endrin breakdown 36.15

Combined 39.7

RPD < 25%

PEM04 DB1701

RPD endrin = 78%

PEM05 DB1701

RPD 4,4-DDT = 33%

PEM06 DB1701

endrin breakdown 36.8

Combined 39.6

RPD's beta-BHC 27

4,4-DDT 27

PEM07 1701

endrin breakdown 31.7

Combined 31.7

RPDs 4,4-DDT 27

PEM01 DB608 ok

PEM02 DB608
endrin breakdown 32.71 %
Combined 33.38

endrin ketone 14212 / 1107787.5 = 0.0128
endrin aldehyde 20500 / 1031237.5 = 0.0198

$$\frac{0.0128 + 0.0198}{0.1} \times 100 = 32.6\%$$

PEM03
RPD Beta-BHC 37%
4,4-DDT 27%
endrin breakdown 39.4
Combined 38

PEM04
RPD beta-BHC 29
4,4-DDT 37
endrin breakdown 31
Combined 31

PEM05 beta-BHC = 43
endrin = 59
4,4-DDT = 46
methoxychlor = 37
endrin Breakdown 26.03
Combined 26.03

PEM06 ok

PEM07 4,4-DDT 27% RPD

PEM08 ok

PEM09 DB608

RPD 4,4-DDT = 41

PEM10 4,4-DDT = 30

endrin breakdown 24.37
Combined 28.15

PEM11

RPD 4,4-DDT = 33

Calibration Verification RPD < 25%

INDAM03 DB1701
Endrin 72%
Methoxychlor 30

INDAM04 ?

INDAM04 DB608
44-DDT = 41
methoxychlor = 30

INDBM04 DB608
delta-BHC = 31

Florisil Clean-up 80-120
alpha BHC 77
4,4-DDT 76
TCX 55
DCB 79

GPC 80 - 110

gamma BHC	128
heptachlor	126
aldrin	125
dieldrin	127
endrin	206
4,4-DDT	117

COMPONENT	COMPARISON	FORM 10A	%D < 25%
1C	alpha chlordane	230%	
2N	alpha chlordane	89	
	gamma chlordane	530	
2ADL	alpha chlordane	117	
	gamma chlordane	506	
2D MSD	endrin	43	
2EDL	gamma chlordane	49	
	4,4-DDT	61	
2F	gamma chlordane	117	
3A	alpha chlordane	84	
	gamma chlordane	118	
	4,4-DDT	158	
3B	4,4-DDT	30	
4A	alpha chlordane	47	
	gamma chlordane	95	

5A	alpha chlordane	53
	gamma chlordane	184
	4,4-DDT	73
5B	alpha chlordane	28
	gamma chlordane	110
1A	aroclor 1254	119
1C	aroclor 1254	39
2E	aroclor 1260	32

REVIEW OF INORGANIC
CONTRACT LABORATORY PACKAGE

Case Number:
Laboratory: ***NETL***
SDG: ***19***
SOW:
Completion Date: ***11/17/94***

Site Name: ***Wells G & H Superfund Site***
No. of Samples/Matrix: ***soil***
Reviewer: ***RETEC***
Reviewer's Name: ***R. Roat***

DATA ASSESSMENT SUMMARY

		ICP	AA	Hg	Cyanide
1.	Holding Times	O	O	O	O
2.	Calibrations	O	O	O	O
3.	Blanks	O	O	O	O
4.	ICS	O	O	O	O
5.	LCS	O	O	O	O
6.	Duplicate Analysis	O	O	O	O
7.	Matrix Spike	X	O	O	O
8.	Serial Dilution	X	-	-	-
9.	Overall Assessment	O	O	O	O

O = Data had no problems or qualified due to minor problems
M = Data qualified due to major problems
Z = Data unacceptable
X = Problems, but do not affect data

Action Items:

I. HOLDING TIMES

Sample ID	Date Sampled	Hg Analysis Date	Cyanide Analysis Date	Metal Analysis Date	Action
4A	*10/04/94*			*10/27/94*	
4B	*10/04/94*			*10/27/94*	
4C	*10/04/94*	*10/24/94*	*10/14/94*	*10/27/94*	
2A	*10/04/94*	*10/24/94*	*10/14/94*	*10/27/94*	
2B	*10/04/94*			*10/27/94*	
2C	*10/04/94*			*10/27/94*	
2D	*10/04/94*	*10/24/94*	*10/14/94*	*10/27/94*	
2E	*10/04/94*			*10/27/94*	
1A	*10/04/94*			*10/27/94*	
1B	*10/04/94*			*10/27/94*	
1D	*10/04/94*	*10/24/94*	*10/14/94*	*10/27/94*	
1C	*10/04/94*	*10/24/94*	*10/14/94*	*10/27/94*	
3A	*10/11/94*			*10/27/94*	
3B	*10/11/94*			*10/27/94*	
5A	*10/11/94*			*10/27/94*	
5B	*10/11/94*			*10/27/94*	
2F	*10/11/94*			*10/27/94*	

Metals - 180 days from collection preserved pH < 2
Mercury - 28 days from collection preserved pH < 2
Cyanide - 14 days from collection preserved pH > 12
If holding times are exceeded all positive results are estimated (J) and non-detects are estimated (UJ).

II. INSTRUMENT CALIBRATION (Form 2A)

1. Recovery Criteria - List the analytes which did not meet the percent recovery (%R) criteria for initial and continuing calibration.

Date	ICV/CCV	Analyte	%R	Action	Samples Affected

Passed all validation criteria

Action:

	Accept	Estimate (J)	Reject (R)
Metals:	90-110%	75-89%, 111-125%	<75%, >125%
Mercury:	80-120%	65-79%, 121-135%	<65%, >135%
Cyanide:	85-115%	70-84%, 116-130%	<70%, >130%

2. Analytical Sequence

A. Did the laboratory use the proper number of standards for calibration as described in the SOW? *Yes*

B. Were calibrations performed at the beginning of each analysis? *Yes*

C. Were calibration standards analyzed at the beginning of sample analysis and at a minimum frequency of ten percent or every two hours during analysis? *Yes*

D. Were the correlation coefficient for the calibration curves for AA, Hg, and CN- >0.995? *Yes*

E. Was a standard at 2xCRDL analyzed for all ICP analysis? *Yes*

If No, the data may be affected. Use professional judgement to determine the severity of the effect and quality of the data.

III. BLANK ANALYSIS RESULTS (Form 3)

List the blank contamination.

1. Laboratory Blanks

DATE	ICB/CCB	PREP BL	ANALYTE	CONC.

Passed all validation criteria

2. **Equipment/Trip Blanks:** *Not applicable to soils*

DATE	EQUIP BL #	ANALYTE	CONC.

3. **Frequency Requirements**

A. Was a preparation blank analyzed for each matrix, for every 20 samples and for each digestion batch? *Yes*

B. Was a calibration blank run every 10 samples or every 2 hours? *Yes*

If No, the data may be affected. Use professional judgement to determine the severity of the effect and quality of the data.

III. BLANK ANALYSIS RESULTS (cont)

Actions: ***Passed validation criteria***

The action level for any analyte is equal to five times the highest concentration of that elements contamination in any blank. No positive results should be reported unless the concentration of the analyte exceeds the Action Level (AL).

1. When the concentration is greater than the IDL, but less than the AL, report the sample concentration detected with a U.

2. When the sample concentration is greater than the AL, report the sample concentration unqualified.

ELEMENT	MAX CONC.	AL UNITS

IV. ICP INTERFERENCE SAMPLE (Form 4)

1. Recovery Criteria

List any element in the ICS AB solution which did not meet the criteria for %R

	Percent Recovery		
	<50%	50-79%	>120%
Positive sample results	R	J	J
Non-detected samples	R	UJ	A

DATE	ELEMENT	%R	ACTION	SAMPLES AFFECTED

Passed all validation criteria

2. **Frequency Requirements**

A. Were Interference QC samples run at the beginning and end of each sample analysis run or a minimum of twice per eight hours? ***Yes***

If No, the data may be affected. Use professional judgement to determine the severity of the effect and quality of the data.

IV. ICP INTERFERENCE SAMPLE (cont)

3. Report the concentration of any element detected in the ICS solution > 2xIDL that should not be present.

ELEMENT	CONC. DETECTED IN THE ICS	CONC. OF INTERFERENTS IN THE ICS			
		AL	CA	FE	MG

Passed all validation criteria

Estimate the concentration produced by the interfering element in all affected samples.

SAMPLE AFFECTED	ELEMENT AFFECTED	SAMPLE CONC.	SAMPLE INTERFERANT AL	CA	FE	MG	ESTIMATED INTERF.

Action:

1. The sample data can be accepted without qualification if the sample concentrations of Al, Ca,Fe, and Mg are less than 50% of their respective levels in the ICS solution.
2. Estimate (J) positive results for affected elements for samples with levels of >50% or more.
3. Reject (R) positive results if the reported concentration is due entirely to the interferant.
4. Estimate (UJ) non-detected results for which false negatives are suspect.

V. MATRIX SPIKE (Form 5A)

Sample Number: ***MS-2D***

1. Recovery Criteria

List the percent recoveries for analytes which did not meet the required criteria.

S - amount of spike added
SSR - spikes sample result
SR - sample result

ANALYTE	SSR	SR	S	%R	ACTION
anitmony	*90.2*	*0.0*	*130.4*	*69.2*	*esitmate conc.*
lead	*6.1*	*4.4*	*4.3*	*38.1*	*estimate conc.*

Actions:

1. If the sample concentration exceeds the spike concentration by a factor of 4 or more, no action is taken.
2. If any analyte does not meet the %R criteria, follow the actions stated below:

	Percent Recovery		
	<30%	30-74%	>125%
Positive Sample Results	J	J	J
Non-Detected Results	R	UJ	A

2. Frequency Criteria

A. Was a matrix spike prepared at the required frequency? ***Yes***

B. Was a post digestion spike analyzed for elements that did not meet required criteria for matrix spike recovery? ***Not required***

VI. LABORATORY DUPLICATES (Form 6)

List the concentration of any analyte not meeting the criteria for duplicate precision.

ELEMENT	CRDL	SAMPLE #	DUPLICATE #	RPD	ACTION
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead	*0.5*	*4.4*	*2.6*	*52.1*	*estimate*
Magnesium					
Manganese					
Mercury					
Nickel					
Potassium					
Selenium					
Silver					
Sodium					
Thallium					
Vanadium					
Zinc					
Cyanide					

Action:

1. Estimate (J) positive results for elements which have a RPD >20% for water and >35% for soils.
2. If sample results are less than 5x the CRDL, estimate (J) positive results for elements whose absolute difference is >CRDL. If both samples are non-detected, the RPD is not calculated (NC).

VII. FIELD DUPLICATES

List the concentrations of all analytes in the field duplicate pair. ***1C and 1D***

ELEMENT	CRDL	SAMPLE #	DUPLICATE #	RPD	ACTION
Aluminum		*1,005*	*1,586*	*44.8*	
Antimony					
Arsenic					
Barium		*11*	*71.5*	*146*	*J*
Beryllium					
Cadmium					
Calcium		*513*	*825*	*46.6*	
Chromium		*25.8*	*77.7*	*100*	
Cobalt					
Copper		*1.6*	*3.2*	*66.6*	
Iron		*249*	*470*	*61.4*	
Lead		*2.4*	*4.5*	*60.8*	
Magnesium		*41.6*	*79.6*	*62.7*	
Manganese		*9.0*	*15.0*	*50*	
Mercury					
Nickel		*2.2*	*ND*		
Potassium					
Selenium					
Silver					
Sodium		*34.4*	*48.6*	*34.2*	
Thallium					
Vanadium		*0.5*	*1.3*	*88.8*	
Zinc		*174*	*301*	*53.4*	
Cyanide					

Action:

1. Estimate (J) positive results for elements which have a RPD >30% for water and >50% for soils.
2. If sample results are less than 5x the CRDL, estimate (J) positive results for elements whose absolute difference is >2xCRDL. If both samples are non-detected, the RPD is not calculated (NC).

VIII. LABORATORY CONTROL SAMPLE (Form 7)

List any LCS recoveries not within the 80-120% criteria and the samples affected.

DATE	ELEMENT	%R	ACTION	SAMPLES AFFECTED

Passed all validation criteria

Action:

	Percent Recovery		
	<50%	51-79%	>120%
Positive Results	R	J	J
Non-Detected Results	R	UJ	A

2. Frequency Criteria

A. Was an LCS analyzed for every matrix, digestion batch and every 20 samples? *Yes*

IX. FURNACE AA ANALYSIS

1. Duplicate Precision

X Duplicate injections and one point analytical spikes were performed for all samples, duplicate injections agreed within +- 20%.

Duplicate injections and/or spikes were not performed for the following samples/elements:

Duplicate injections did not agree within +-20% for samples/elements:

IX. FURNACE AA ANALYSIS (cont.)

2. Post Digestion Spike Recoveries

X Spike recoveries met the 85-115% recovery criteria for all samples.

Spike recoveries did not meet the 85-115% criteria but did not require MSA for the following samples/elements:

X MSA was used to quantitate analytical results when contractually required.
X Correlation coefficients >0.995, accept results
Correlation coefficients <0.995, for sample numbers/elements:

Method of standard addition (MSA) was not performed as required for samples/elements:

Actions:

1. Estimate (J) positive results if duplicate injections are outside +-20% RSD or CV.
2. If the sample absorbance is <50% of post digestion spike absorbance the following actions should be applied:

	Percent Recovery		
	<10%	11-84%	>115%
Positive Result	J or R	J	J
Non-detected	R	UJ	A

3. Estimate (J) sample result if MSA was required and not performed.
4. Estimate (J) sample result if correlation coefficient was <0.995.

X. ICP SERIAL DILUTION ANALYSIS (Form 9)

Serial dilutions were performed for each matrix and results of the diluted sample analysis agreed within ten percent of the original undiluted analysis.

Serial dilutions were not performed for the following:

X Serial dilutions were performed, but analytical results did not agree within 10% for analyte concentrations greater than 50x the IDL before dilution.

Report all results that do not meet the required laboratory criteria for ICP dilution.

ELEMENT	IDL	50xIDL	SAMPLE #	DUPLICATE #	%D	ACTION
Aluminum						
Barium						
Beryllium						
Cadmium						
Calcium						
Chromium			*413*	*475*	*15.0*	
Cobalt						
Copper						
Iron			*2,495*	*2,890*	*15.8*	
Lead						
Magnesium			*462*	*574*	*24.2*	
Manganese			*80.0*	*90.0*	*12.5*	
Nickel						
Potassium						
Silver						
Sodium						
Vanadium						
Zinc						

Action:

1. Estimate (J) positive results if %D > 15.

XI. DETECTION LIMITS (Form 10)

1. Instrument Detection Limits

X Instrument detection limit results were present and found to be less than the contract required detection limits (CRDL).

IDLs were not included in the data package

IDLs were present, but the criteria was not met for the following elements:

2. Reporting Requirements

A. Were sample results on Form I reported down to the IDL not the CRDL for all analytes? *Yes*

B. Were sample results that were analyzed by ICP for Se, Tl, or Pb at least 5x IDL? *Yes*

C. Were sample weights, volumes, and dilutions taken into account when reporting detection limits on Form I? *Yes*

If No, the data may be affected. Use professional judgement to determine the severity of the effect and quality of the data.

XII. SAMPLE QUANTITATION

X Sample results fall within the linear range for ICP and within the calibrated range for all other parameters.

Sample results were beyond the linear range/calibration range of the instrument for the following elements:

1. Sample Calculation:

ICP:

AA Furnace:

Mercury:

Cyanide:

NETL 19-1

Metals

	TCL	LEAD	Sampled	Received	
4A		X	10/4	10/5	
4B		X			
4C	X				
2A	X				
2B		X			
2C		X			
2D	X				CHECK MS
2E		X			
1A		X			
1B		X			
1D	X				
1C	X				
3A		X	10/11	10/12	
3B		X			
5A		X			
5B		X			
2F		X			

ICAL + CCAL

ICP passed Criteria %R, calculated correctly

Furnace Passed Cold vapor passed, Cyanide passed.

CRDL %R ±20% NC validation Criteria

manganese	127	122
cadmium	126	
Nickel	124	
Lead	122	66.7
Mercury	55	

Blanks Pass Criteria < CRDL

ICP interferance
- From 4 ±20% except Al, Ca Fe, Mg
- Performed beginning + ENDS, but before CCV
- Twice / 8 hrs
- ICP interferance only applicable if [x] of Al, Ca, Fe + Mg are ≥ concentration in orginal sample
- No transcription errors

Spike Sample ±25% if spike added (SA) ≥ 1/4 of sample result (SR)
Pre-digested spike

Failed Antimony (J)
Lead (F) 33

Equation $R = \frac{SSR - SR}{SA} \times 100$

Quantitation $23.93 \frac{mg}{L} = \frac{23.93 \text{ ug/L} \times (.2) \text{ Liters}}{.000 \times 1.514 \text{ g} \times .768} = 4.124\% \text{ ug/g}$ or 4.124

1-2 grams soil 100 ml
1.514 grams 200 mls

Duplicates Lead failed Furnace 52% Quality est (J)
IF [X] > 5x CRDL must be ± 20%
IF [X] < 5x CRDL Then ± CRDL
IF [X] < CRDL Then no comparison

LCS Pass QC Limits

ICP Serial Dilution %D > 10% and sample conc > 50x IDL
Failed Chromium, Iron Magnesium, Manganese

Correlation Coefficient > 0.995 for Hg + CN

			50x
10 ug/L x .2 / .768 x 1.5	Chromium	0.5 mg/kg	27
	Iron	0.5	27
	Mag	0.7	36
	Mang	0.2	910

metals

MS-1C - Quality Antimony FOR failed spike
Lead for failed duplicate injection
Iron Magnesium FOR failed serial Dilution

MS-1D · Qual antimony spike
Lead for duplicate
Iron, magnesium, manganese Serial dilution

MS-2A -Same quals as MS-1D

MS-2D Same as MS-2A except no Chrom Qual, Less Than 50x IDL

MS-4C Same as MS-2D, no chromium

REVIEW OF ORGANIC
CONTRACT LABORATORY PACKAGE

Site Name: ***Wells G & H Superfund Site***
Reference Number:

The hard copied data package received at RETEC has been reviewed and the quality assurance and performance data summarized. The data review included:

Case No.: ***E1006-05***	SAS No.:	Sample Dates: ***10/5 + 10/18/94***
SDG No.: ***20-1***	Matrix: ***soil***	Shipping Date: ***10/5 + 10/18/94***
No. of Samples: ***15***		Date Rec'd by Lab: ***10/6 + 10/19/94***

The CLP SOW for requires that specific analytical work be done and the general criteria used to determine the performance were based on the examination of:

- Data Completeness
- Holding Times
- GC/MS Tuning
- Calibrations
- Blanks
- Surrogate Recoveries
- Matrix Spike/Matrix Spike Dup.
- Field Duplicates
- Internal Std Performance
- Pest. Inst. Performance
- Compound Identification
- Compound Quantitation

Overall comments:

Data package was acceptable

Definition of qualifiers:

A = Acceptable data.
J = Approximate data due to quality control criteria.
R = Reject data due to quality control criteria.
U = Compound not detected.
UJ = Compound detection limit is approximate

Reviewer: Date:

I. DATA COMPLETENESS

Missing Information, Date Lab Contacted, Date Received: ***Data package complete***

II. HOLDING TIMES:

		VOA	BNA		Pest.	
Sample ID	Date Sampled	Date Anal.	Date Extr.	Date Anal.	Date Extr.	Date Anal.
A	*10/05/94*	*10/15/94*	*10/12/94*	*10/14/94*	*10/11/94*	*10/27/94*
B	*10/05/94*	*10/15/94*	*10/12/94*	*10/14/94*	*10/11/94*	*10/27/94*
C	*10/05/94*	*10/15/94*	*10/12/94*	*10/13/94*	*10/11/94*	*10/27/94*
D	*10/05/94*	*10/15/94*	*10/12/94*	*10/14/94*	*10/11/94*	*10/27/94*
E	*10/05/94*	*10/15/94*	*10/12/94*	*10/14/94*	*10/11/94*	*10/27/94*
F	*10/05/94*	*10/15/94*	*10/12/94*	*10/14/94*	*10/11/94*	*10/27/94*
G	*10/05/94*	*10/15/94*	*10/12/94*	*10/14/94*	*10/11/94*	*10/27/94*
H	*10/05/94*	*10/15/94*	*10/12/94*	*10/13/94*	*10/11/94*	*10/27/94*
X	*10/05/94*	*10/15/94*	*10/12/94*	*10/15/94*	*10/11/94*	*10/27/94*
TB	*10/05/94*	*10/15/94*				
FB	*10/05/94*	*10/15/94*	*10/07/94*	*10/14/94*	*10/28/94*	*11/02/94*
SL-02	*10/18/94*		*10/24/94*	*10/27/94*	*10/21/94*	*10/27/94*
SL-17/18	*10/18/94*		*10/24/94*	*10/27/94*	*10/21/94*	*10/27/94*
SL-19	*10/18/94*		*10/24/94*	*10/27/94*	*10/21/94*	*10/27/94*
SL-20	*10/18/94*		*10/24/94*	*10/27/94*	*10/21/94*	*10/27/94*

VOA:
- Unpreserved: aromatics within 7 days, non-aromatics within 14 days of sample collection.
- Preserved: Both within 14 days of sample collection.
- Soils: Both within 10 days of sample collection.

BNA & Pest:
- Extracted within 7 days, analyzed within 40 days, soils and water.

Action: If holding times are exceeded all positive results are estimates (J) and non-detects are estimated (UJ). If holding times are grossly exceeded then data unusable (R).

III. GC/MS TUNING (Form 5B)

The DFTPP performance results for semi-volatile analysis were reviewed and found to be within the specified criteria (page D-40/SV).

If no, samples affected:

Tunning passed all SVOC QC criteria

Calculations:

The BFB performance results for volatile organic analysis were reviewed and found to be within the specified criteria (page D-25/VOA) Form 5A.

If no, samples affected:

Several files containing BFB information were lost during a memory error. No BFB exsists for the FB, TB, 2A, and D. Avidavits were submitted by the analysist indicating compliance with the lost BFB standards.

Calculations:

IVA. VOLATILE CALIBRATION VERIFICATION (Form 6A, 7A)

Date of Initial Calibration: *8/30 + 8/31/94*
Dates of Continuing Calibration: *10/14, 10/15/94*
Instrument ID: *MACH 1*
Matrix/Level: *Soil/low*

Date	Criteria Out RF, %RSD, %D	Compound (value)
8/30	*RSD*	*methylene chloride (35.1)*
		acetone (69.9)
		2-butanone (37)
8/31	*RSD*	*methylene chloride (45)*
		acetone (68)
10/14	*D*	*methylene chloride (685)*
		acetone (384)
		bromoform (36)
10/15	*D*	*methylene chloride (196)*
		acetone (387)

Calculations:

Initial calibration uses 5 concentrations.
All Avg. RF's and RF's must be >0.05; if <0.05, mark positive results (J) and non-detects (R) (page D-27/VOA).
All %D's must be <25%; if >25% mark detects (J) and non-detects (UJ)
Some compounds must meet RRF of 0.01 (page D-28/VOA).

IVB. SEMI-VOLATILE CALIBRATION VERIFICATION (Form 6B, 7B)

Date of Initial Calibration: ***9/5/94***
Dates of Continuing Calibration: ***10/13, 10/14, + 10/27/94***
Instrument ID:
Matrix/Level: ***Soil/low***

Date	Criteria Out RF, %RSD, %D	Compound (value)
9/5	*RF*	*2,4-dinitrophenol (0.03)*
	RSD	*4-chloroaniline (43)*
		3-notroaniline (66)
		2,4-dinitrophenol (38)
		3,3-dichlorobenzidine (35)
10/13	*D*	*4-chloroaniline (50)*
		hexachlorobutadine (46)
		3-nitroaniline (54)
		4-nitroaniline (36)
		4-nitrophenol (34)
		pentachlorophenol (36)
		benzo(g,h,i)perylene (35)
10/14	*D*	*indeno(1,2,3-cd)pyrene (38)*
		dibenz(a,h)anthracene (33)
		2-fluorobiphenyl (31)
10/27	*D*	*indeno(1,2,3-cd)pyrene (36)*
		dibenz(a,h)anthracene (30)

Calculations:

All Avg. RF's and RF's must be >0.05; if <0.05, mark positive results (J) and non-detects (R) page D-34/SV.
All %RSD's must be <30%; if >30% mark detects (J) and non-detects (UJ) if <50%
All %D's must be <25%; if >25% mark detects (J) and non-detects (UJ)
Tables for RRF, %D, and %RPD on pages D-46,47/SV.

V. BLANK ANALYSIS RESULTS

Laboratory Blanks:

Date	Lab ID	Matrix	Compound	Concentration
10/15/94	***VBLK02***	***soil***	***methylene chloride***	***9.5 ug/Kg***
			acetone	***6.6***
10/14/94	***SBLKS1***	***soil***	***di-n-butylphthalate***	***25***
			bis(2-ethylhexyl)phthalate	***23***

Equipment and Field Blanks:

Date	Lab ID	Matrix	Compound	Concentration
10/15/94	FB	water	methylene chloride	2.4 ug/l
			acetone	1.7
10/15/94	TB	water	methylene chloride	1.4
			acetone	1.1
			toluene	2.1

If concentration < CRQL, report CRQL
If concentration > CRQL, but less than action level (5x or 10x), report as (U)
If concentration > than action level, report as (R)

VI. SURROGATE RECOVERIES (Form 2C, 2E)

Sample matrix:

	VOA			B/N				
Samples	TOL	BFB	DCF	NBZ	FBP	TPH	PHL	2FP	TBP
	Pass criteria			*Pass criteria*				

Calculations:

	Water	Soil	
TOL = Toluene-d_8	88-110	84-138	Page D-50/VOA
BFB = Bromofluorobenzene	86-115	59-113	
DCF = 1,2 Dichloroethane-d_8	76-114	70-121	
NBZ = Nitrobenzene-d_5	35-114	23-120	Page D-56/SV
FBP = 2-Flurobiphenyl	43-116	30-115	
TPH = Terphenyl-d_{14}	33-141	18-137	
PHL,2FP,TBP	60-150	60-150	

VII. FIELD DUPLICATE PRECISION

Sample matrix: *soil* Sample Nos.: ***H and X***

List compounds that do not meet the following RPD criteria:

- An RPD of $<30\%$ for water
- An RPD of $<50\%$ for soil

Fraction	Compound	Sample Conc.	Dup Conc.	RPD

Passed validation criteria

If the results for any compound do not meet the RPD, then flag positive results as estimated (J).

VIII. INTERNAL STANDARD PERFORMANCE (Form 8A, 8B)

List the internal standard areas of samples that do not meet the criteria of +100% or -50% of the internal standard area on the continuing calibration standard.

Sample ID	Date	I.S. Out	I.S. Area/RT	Acceptable Range	Action

VOC passed criteria

SVOC passed criteria

Positive results are flagged with (J)
Non-detects are flagged with (UJ)
Page D-43, 51/SV
Page D-47/VOA

IX. MATRIX SPIKE/MATRIX SPIKE DUPLICATE (Form 3C)

Must be performed for each group of samples of a similar matrix following the frequency:

- Each case of 20 field samples
- Each 20 field samples in a case
- Each group of soil samples of a similar concentration.
- Each 14 calendar day period which field samples were received.

List the samples not within RPD:

Date	Sample No.	Compound	%REC	Limit
VOC passed criteria				
10/15/94	*CMSD*	*2,4-dinitrotoluene*	*103*	*28-89*
		pentachlorophenol	*122*	*17-109*

If any recoveries < 10%, flag positive results (J), flag non-detects (UJ). RPD for VOAs page D-50/VOA, SV on page D-57/SV, and Pest. on page D-58/pest.

X. PESTICIDE INSTRUMENT PERFORMANCE

List DDT retention times less than 12 minutes.

Standard ID	Date/Time	RT	Samples Affected	Actions

All 4,4-DDT retension times > 12 minutes

If retention time < 12 min., reexamine for good separation, if not flag affected compounds (R)

List compounds which are not within the established windows.

Compound	Date/Time	RT	RT Window	Samples Affected

Must be within 0.02 min. of the mean RT (page D-47/PEST)
If out of RT window and no peaks in expected RT window then its ok.
If out of RT window and peaks are in expected RT window, recalculate conc. using different STDs.

X. PESTICIDE INSTRUMENT PERFORMANCE (cont.) (Form 7D)

DDT and Endrin Degradation. List the standards which have a DDT or Endrin breakdown >20%.

Standard ID	DDT or Endrin	% Breakdown	Samples Affected
PEM02	*endrin*	*23*	*DB1701 column*
PEM03	*endrin*	*23*	*DB1701*
PEM04	*endrin*	*21*	*DB1701*
PEM05	*endrin*	*27*	*DB1701*

Calculations:

If breakdown >20%, flag positive results (J). If DDT is not present but DDD or DDE are, flag (R). Flag all positive results for DDD and/or DDE (J).

If breakdown >20%, flag positive results (J). If Endrin is not present but endrin aldehyde and/or endrin ketone are, flag (R). Flag all positive results for E. aldehyde and/or E. ketone (J).

XI. SURROGATE RECOVERIES (Form 2F)

Sample matrix:

	Column 1		Column 2	
Samples	TCX	DCB	TCX	DCB
FB	*22*	*25*	*31*	*28*
MB			*209*	*162*
B	*194*	*53*		
C	*182*	*242*		
PBLK01			*34*	*46*
PBLK03			*51*	*40*

Calculations:

	QC Limits
TCX = Tetrachloro-m-xylene	60-150
DCB = Decachlorobiphenyl	60-150

XII. PESTICIDE CALIBRATION (Form 6E)

Initial Calibration: Must be calibrated with 3 conc. Calibration factors on page D-41/pest. RSD on page D-43/pest. RSD ,15% for compounds on page D-43/pest.

List compounds which did not meet RSD $<10\%$ or 15%

Date	Compound	Mean	%RSD	Column	Samples Affected

Passed validation criteria

Calculations:

Flag all positive results (J)

Analytical Sequence (Form 8D):

Did the lab follow the correct sequence every 72 hours? If no, data may be affected.

Correct sequence followed

XIII. PESTICIDE CALIBRATION (Form 7D, 7E)

Continuing Calibration:

List the compounds which did not meet the %D of <15% on quantitation or 20% on confirmation for continuing calibration.

Date	Compound	%D	Column	Sample Affected
	endrin	*45*	*DB1701*	*INDAM04*
	methoxychlor	*58*	*DB1701*	"
	4,4-DDT	*60*	*DB1701*	"
	endosulfan sulfate	*33*	*DB1701*	*INDBM04*
	endrin ketone	*31*	*DB1701*	"
	endrin aldehyde	*37*	*DB1701*	"

IX. GPC and Florisil Clean-Up (Form 9A, 9B)

List compounds which did not use florisil clean-up or surpassed validation criteria:

Date	Sample No.	Compound	%REC
	florisil	*decachlorobiphenyl*	*131*
	GPC	*gamma-BHC*	*115*
		aldrin	*125*

QC Limits on florisil %REC = 80-120%
QC Limits on GPC %REC = 80-110%
If %REC <80%, qualify positive results (J) and non-detects (UJ). If %REC = 0, then (R) qualify non-detects

XV. MATRIX SPIKE/MATRIX SPIKE DUPLICATE (Form 3F)

Must be performed for each group of samples of a similar matrix following the frequency:

- Each case of 20 field samples
- Each 20 field samples in a case
- Each group of soil samples of a similar concentration.
- Each 14 calendar day period which field samples were received.

List the samples not within RPD:

Date	Sample No.	Compound	%REC	Limit

MS/MSD was performed on a highly contaminated sample, C. Concentrations of technical chlordane saturated the GC/ECD. Spike values were un-readable. The MS/MSD sample is meaningless.

XVI. SAMPLE QUANTITATION

VOA:

BNA:

PEST/PCB:

Wells G+H 1/13/95

Validation SDG 20-1

Debris pile

GROUP		SHIPED	RECEIVED	CRITERIA	TAL/TCL
	A	10/5	10/6	COMPOUNDS X	
	B			X	
	C				X
	D			X	
	E			X	
	F			X	
	G			X	
	H				X
	X				X
	TRIP				
	Field				

SL-2	10/18	10/19	X
SL-17/18			X
SL-19			X
SL-20			X

√ OA

Surrogates

- Passed QC Criteria
- No Transcription errors

Surrogates Continued.

Sample B Toluene$_{d8}$ = 104.55 %
chlorobenzene ISTD

$$\frac{448209 \times 50 \text{ ug/L}}{415663 \times 1.031} = 52.29 \text{ ug/L} \Big/ 50 \text{ ug/L} \times 100 = 104$$

Sample H Bromofluorobenzene = 57.33 %
Chlorobenzene = ISTD

$$\frac{182288 \times 50 \text{ ug/L}}{254875 \times .819} = 43.663 \text{ ug/L} \Big/ 50 \text{ ug/L} \times 100 = 87.33$$

Internal stds
No Transcription errors
Passed QC Criteria +100% -50% ± 0.50 min

Initial Calibrations

① 8/30/94 1256 hrs
RRF > 0.05 RSDs < 30% methylene chloride 35
acetone 70%
Calculations $\overline{RRF}$ + RSD ok 2-butanone 37%

RRF_2 Hexanone = 0.056 chlorobenzene = ISTD

$$\frac{5490 \quad 5\ ug/L}{245766 \times 2\ ug/L} = 0.056$$

ICAL 8/31/94 1457 hrs

RRFs > 0.05 RSDs < 30% methylene chloride 45.7
acetone 68.8

$\overline{RRF}$ and RSD calculated ok

Dichloroethane RRF_{75} 0.530 1-4-Difluorobenzene ISTD

$$\frac{1234794 \times 50\ ug/L}{991284 \times 75\ ug/L} = 0.530$$

CCAL 10/14/94 1137 hrs

RRFs > 0.05 %D < 25% methylene chloride 685
acetone 384
bromoform 36

RF_5 MEK = 0.189

$$\frac{6915 \times 5\ ug/L}{36501 \times 5\ ug/L} = 0.189$$

ccal 10/15/94 1104 hrs

RRFs > 0.05 %D < 25% methylene chloride 196
acetone 397

Calculations % D ok

RRF_{50} trichloroethene 0.360

$$\frac{227878 \quad 50\ ug/L}{633572 \quad 50\ ug/L} = 0.3569$$

Tuning - pass QC criteria

8/31/94 BFB

m/z 95 = 16.6%

$$\frac{1622}{9747} \times 100 = 16.6\%$$

method blanks

VBLK01 clean

VBLK02 mc = 9.5 acetone 6.6 ug/kg

MS/MSD Pass QC criteria

Field blanks mc = 2.4 ug/L acetone = 1.7

Trip blanks mc = 1.4 ug/L acetone 1.1 toluene 2.1

Field dups H + X ok

Sample Quantitation

Sample H trichloroethene = 3.2 ug/kg

$$\frac{7589 \times 50\ ng/ml \times 5\ ml}{358525 \times .360 \times 5.192\ g \times .90} = 3.14\ ng/g \text{ o}$$

ug/kg

Qualifiers

Sample

C	Blank qualify MC + acetone MB contamination J for poor %D ccal
H	Same as C
X	Same as H
DDL	Methylene chloride acetone poor ccal (J)
FB	MC + acetone poor ccal (J)
TB	Same as FB

SDG-20 SVOA 1/13/95

Surrogates

Passed QC criteria

No Transcription errors

sample A 2-Fluorobiphenyl = 58%

$$\frac{189256 \times 20 \text{ ug/ml}}{108897 \times 1.195} = \frac{29.08 \text{ ug/ml}}{50 \text{ ug/ml}} \times 100 = 58.1$$

Sample SL-20 NBZ = 73%

$$\frac{93891 \times 20 \text{ ug/ml}}{150872 \times .341} = \frac{36.49 \text{ ug/ml}}{50 \text{ ug/ml}} \times 100 = 72.9\%$$

Internal Stds

Passed QC Criteria

No Typo's

ICAL 9/05/94 1150 hrs

RRFs > 0.05 RSDs < 30%

$\overline{RRF}$s + RSDs Calculated OK

4-chloroaniline	43
vs 3-nitroaniline	66
2,4-Dinitrophenol	38

RRF_{80} anthracene = 0.963

$$\frac{417740 \times 20 \text{ ug/ml}}{216990 \times 40 \text{ ug/ml}} = 0.963$$

CCal 10/13/94 1815 hrs

RRFs > 0.05 %D < 25% vs 4-chloroaniline 50

hexachlorocyclopentadiene 42

% Ds calculated ok vs 3-nitroaniline 54

4-nitrophenol 34

4-nitroaniline 36

Pentachlorophenol 36

vs Benzo(ghi)perylene 35

Surrogate 2-Fluorobiphenyl 28

RRF_{50} Chrysene = 0.919

$$\frac{59406 \times 20 \text{ ug/ml}}{51730 \times 25 \text{ ug/ml}} = 0.9187$$

CCal 10/14/94 1745 hrs

RRF > 0.05 %D < 25% vs dilute

Indeno(123cd)pyrene 3

dibenz(ah)anthracene 33

2-Fluorobiphenyl 31

RRF_{50} benzo(e)pyrene = 0.910

$$\frac{69623 \times 20 \text{ ug/ml}}{61209 \times 25 \text{ ug/ml}} = 0.9099$$

Ccal 10/27/94 1614 hrs

5 detects

RRF5 > 0.05 %D < 25% indeno(123-cd)pyrene 36
dibenz(ah)anthracene 30

RRF_{50} Chrysene 0.909

$$\frac{153410 \times 20 \text{ ug/ml}}{135009 \times 25 \text{ ug/ml}} = 0.909$$

Tuning - Passed QL criteria

m/z 51 = 47.38% 7/5/94

$$\frac{47.377}{100.00} \times 100 = 47.377\%$$

method blanks Di-n-butylphthalate 25 ug/kg
bis(2-ethylhexyl)phthalate 23

Field blank - Clean

MS/MSD MSD %R 2,4-Dinitrotoluene 103%
sample C Pentachlorophenol 122%

Field Dup. H+X = ok

Sample Quant

sample C bis(2-ethylhexyl)phthalate = 86 ug/

$$\frac{16612 \times 20\ ng/ul \times 2ul \times 1000\ ml}{89402 \times .81 \times 50.9\ g \times 1.049 \times 2ul} = 85.9$$

Quantitation

C Qualify di-n-butylphthalate bis(2-ethylhexyl) phthalate MB contamination

J 3-nitroaniline + 4-Chloroaniline poor Ical + ccal %RSD + %D.

D J Qual Indeno + Dibenz poor %D CCAL

G Same as D

H Same as C

SL-20 J Indeno poor %D

X UJ 3-nitroaniline, 4 Chloroaniline poor Ical + Ccal U Di-n-butylphthate MB cont

Pest/PCBs SDG-20 * J all results >10%
J positives >150%

Surrogates			TCX$_1$	TCX$_2$	DCB$_1$	DCB$_2$
Fail	FB	DB1701 + DB608	22	25	31	28
PBLK02	MB	DB608		209		162
	B	DB1701	194		53	
	C	DB1701	192		142	
PBLK01		DB608		34		46
PBLK03		DB608		51		40

Sample B 1701 TCX = 194%

FOUND $\frac{506015 \times 5000\ ul \times 2\ gpc}{326325 \times 2\ ul \times 35.2g \times .92} = 26.96\ ug/kg$

added $\frac{2\ ml \times 0.2}{35.2 \times .92} \times 1000 = 13.86\ ug/kg$

$26.96/13.86 \times 100 = 193.8\%$

Sample F 608 85 DCB

FOUND $\frac{313457 \times 5,000\ ul \times 2\ GPC}{0.91 \times 36g \times 2ml \times 4632412.50} = 10.33\ ug/kg$

added $\frac{2ml \times 0.2}{36 \times .91} \times 1000 = 12.21\ ug/kg$

Recovery = 10.33/12.21 x100 = 84.6%

* Calibration Factors ical RSD < 10% ccal < 20%
* J Positives > 10%

DB1701
aldrin 16
endrin 21

608
1,4 DDT 13

DB1701 Low

① aldrin = 3455000 34549 / 0.01 ng = 3455000

② 4,4-DDT HIGH 912959 / 0.32 ng = 2852996
2853000

DB608 mid

① endrin = 2572625 205809 / 0.08 ng = 257261

② alpha-chlordane HIGH
4023862.50 643817 / 0.16 ng = 4023856

PCBs

DB1701

① Aroclor 1248 peak 1 = 162250
32450 / 0.2 ng = 162250

DB608

① Aroclor 1242 peak 2 = 189375
37875 / 0.2 ng = 189375

Percent resolution - Form 6G

Pass QC Criteria ≥60%

Endrin/4,4-DDT Breakdown %D <25%

DB1701 PEM01 = Ok * Results >20%

PEM02 = endrin 23.14*

Combined 23.14

PEM03 = endrin 23.4*

Combined 26.2

PEM04 = endrin 21.4*

Combined 28.3

PEM05 = endrin 27.2*

Combined 32.3*

PEM04 endrin breakdown = 21.438 %

e. aldytle = 25687/2041062.5 = 0.0125

e. ketone = 23853/2694425 = 0.0088

endrin = 232071/2075025 = 0.112

$$\frac{0.0125 + 0.0088}{0.112} = 19.01$$

Calibration Verification Form 7E RPD <25%

RPDs Calculated Ok * >15% Results positives

CCal →

INDAM04 DB1701 endrin = 45

4,4-DDT = 60

methoxychlor = 58

INDBM04 DB1701

endosulfan sulfate 33
endrin ketone 31
endrin aldehyde 37

Analytical Sequence Form 8D

Passed QC requirements.

Florisil check: Form 9A

Failed decachlorobiphenyl 131%

GPC clean-up Form 9B

gamma-BHC 115%
aldrin 111%

Pesticide Identification Form 10A %D < 25%

Sample

A
alpha chlordane 45%
4,4-DDT 478%
1254 126%
1260 59%

ADL
gamma chlordane 105
4,4-DDT 1649

ADL 4X	1254	120%	
B	1260	100%	
BDL3X	alpha chlordane		118
	gamma chlordane		174
	4,4-DDT		849
CDL	alpha-chlordane		78
	gamma-chlordane		112
	4,4-DDT		49
D	gamma-chlordane		135
DDL	alpha chlordane		41
	gamma chlordane		153
E	alpha-chlordane		45
	gamma chlordane		114
	4,4-DDT		52
F	1260		54
FDL	alpha chlordane		ok
	gamma chlordane		56
	4,4-DDT		227

G	alpha chlordane	280
	gamma chlordane	540
	4,4-DDT	536
	1254	40
HDL	gamma chlordane	61
	4,4-DDT	240
	4,4 DDE	69
	4,4-DDD	157
X DL	gamma-chlordane	66
	4,4-DDT	256
	4,4-DDE	54
	4,4-DDD	291
SL-17/18	alpha-chlordane	118
	gamma-chlordane	77
	4,4-DDT	929
SL-19	alpha-chlordane	36
	gamma chlordane	55
SL-20DL	alpha-chlordane	80
	gamma-chlordane	172
SL-2	gamma chlordane	135
	4,4-DDT	74
	alpha-chlordane	65

3456 ug/L

Method blanks – Clean

MS/MSD – To Contaminated to run

Field blanks – clean

Field dups H + X

* >50, J positive results

H		X		RPD
4,4-DDE	162	4,4-DDE	3149	172
4,4-DDD	221	4,4-DDE	2664	169
4,4-DDT	305	4,4-DDT	3579	166
alpha-chlordane	395	alpha	6672	177
gamma-chlordane	405	gamma	6696	177
1254	4,879	1254	61581	170
1260	1,662	1260	20549	170

Sample Quantitation

A 4,4-DDT = 8.2 ug/kg DB170)

$$\frac{109118 \times 10{,}000 \text{ ng/ul}}{2527600 \times 35\text{g} \times .75 \times 2\text{ul}} = 8.2 \text{ ug/kg}$$

Qualifiers

FB UJ all compounds for poor surrogate recovery.

A J 4,4-DDT ICAL RSD >15%

ADL ok

B ok

BDL J 4,4-DDT ICAL RSD >15%

CDL J 4,4-DDT ICAL RSD >15%

D ok

DDL ok

E Correct types alpha chlordane should be 1.7 ug/kg JP Gamma Chlordane should be 1.9 ug/kg P

F ok

FDL ok

G ok

H ok

HDL J all detects for poor %D on Sample dup 750%

SL2: ok

SL-2DL ok

SL-20 ok

SL-20DL ok

SL-17/18 ok

SL-19 ok

XDL J all detects for poor field dup percent Difference >50%

REVIEW OF INORGANIC
CONTRACT LABORATORY PACKAGE

Case Number:
Laboratory: ***NETL***
SDG: ***20***
SOW:
Completion Date: ***12/06/94***

Site Name: ***Wells G & H Superfund Site***
No. of Samples/Matrix: ***soil***
Reviewer: ***RETEC***
Reviewer's Name: ***R. Roat***

DATA ASSESSMENT SUMMARY

		ICP	AA	Hg	Cyanide
1.	Holding Times	O	O	O	O
2.	Calibrations	O	O	O	O
3.	Blanks	O	O	O	O
4.	ICS	O	O	O	O
5.	LCS	O	O	O	O
6.	Duplicate Analysis	O	O	O	O
7.	Matrix Spike	X	O	O	O
8.	Serial Dilution	X	-	-	-
9.	Overall Assessment	O	O	O	O

O = Data had no problems or qualified due to minor problems
M = Data qualified due to major problems
Z = Data unacceptable
X = Problems, but do not affect data

Action Items:

I. HOLDING TIMES

Sample ID	Date Sampled	Hg Analysis Date	Cyanide Analysis Date	Metal Analysis Date	Action
FB	*10/05/94*	*10/24/94*	*10/14/94*	*10/27/94*	
A	*10/05/94*			*10/27/94*	
B	*10/05/94*			*10/27/94*	
C	*10/05/94*	*10/24/94*	*10/14/94*	*10/27/94*	
D	*10/05/94*			*10/27/94*	
E	*10/05/94*			*10/27/94*	
F	*10/05/94*			*10/27/94*	
G	*10/05/94*			*10/27/94*	
H	*10/05/94*	*10/24/94*	*10/14/94*	*10/27/94*	
X	*10/05/94*	*10/24/94*	*10/14/94*	*10/27/94*	
SL-02	*10/18/94*			*10/27/94*	
SL-17/18	*10/18/94*			*10/27/94*	
SL-19	*10/18/94*			*10/27/94*	
SL-20	*10/18/94*			*10/27/94*	

Metals - 180 days from collection preserved pH < 2
Mercury - 28 days from collection preserved pH < 2
Cyanide - 14 days from collection preserved pH > 12
If holding times are exceeded all positive results are estimated (J) and non-detects are estimated (UJ).

II. INSTRUMENT CALIBRATION (Form 2A)

1. Recovery Criteria - List the analytes which did not meet the percent recovery (%R) criteria for initial and continuing calibration.

Date	ICV/CCV	Analyte	%R	Action	Samples Affected

Passed all validation criteria

Action:

	Accept	Estimate (J)	Reject (R)
Metals:	90-110%	75-89%, 111-125%	<75%, >125%
Mercury:	80-120%	65-79%, 121-135%	<65%, >135%
Cyanide:	85-115%	70-84%, 116-130%	<70%, >130%

2. Analytical Sequence

A. Did the laboratory use the proper number of standards for calibration as described in the SOW? *Yes*

B. Were calibrations performed at the beginning of each analysis? *Yes*

C. Were calibration standards analyzed at the beginning of sample analysis and at a minimum frequency of ten percent or every two hours during analysis? *Yes*

D. Were the correlation coefficient for the calibration curves for AA, Hg, and CN- >0.995? *Yes*

E. Was a standard at 2xCRDL analyzed for all ICP analysis? *Yes*

If No, the data may be affected. Use professional judgement to determine the severity of the effect and quality of the data.

III. BLANK ANALYSIS RESULTS (Form 3)

List the blank contamination.

1. Laboratory Blanks

DATE	ICB/CCB	PREP BL	ANALYTE	CONC.

Passed all validation criteria

2. **Equipment/Trip Blanks:** *Not applicable to soils*

DATE	EQUIP BL #	ANALYTE	CONC.

No contaminants detected above CRDL

3. **Frequency Requirements**

A. Was a preparation blank analyzed for each matrix, for every 20 samples and for each digestion batch? *Yes*

B. Was a calibration blank run every 10 samples or every 2 hours? *Yes*

If No, the data may be affected. Use professional judgement to determine the severity of the effect and quality of the data.

III. BLANK ANALYSIS RESULTS (cont)

Actions: ***Passed validation criteria***

The action level for any analyte is equal to five times the highest concentration of that elements contamination in any blank. No positive results should be reported unless the concentration of the analyte exceeds the Action Level (AL).

1. When the concentration is greater than the IDL, but less than the AL, report the sample concentration detected with a U.

2. When the sample concentration is greater than the AL, report the sample concentration unqualified.

ELEMENT	MAX CONC.	AL UNITS

IV. ICP INTERFERENCE SAMPLE (Form 4)

1. Recovery Criteria

List any element in the ICS AB solution which did not meet the criteria for %R

	Percent Recovery		
	<50%	50-79%	>120%
Positive sample results	R	J	J
Non-detected samples	R	UJ	A

DATE	ELEMENT	%R	ACTION	SAMPLES AFFECTED

Passed all validation criteria

2. Frequency Requirements

A. Were Interference QC samples run at the beginning and end of each sample analysis run or a minimum of twice per eight hours? ***Yes***

If No, the data may be affected. Use professional judgement to determine the severity of the effect and quality of the data.

IV. ICP INTERFERENCE SAMPLE (cont)

3. Report the concentration of any element detected in the ICS solution > 2xIDL that should not be present.

ELEMENT	CONC. DETECTED IN THE ICS	CONC. OF INTERFERENTS IN THE ICS			
		AL	CA	FE	MG

Passed all validation criteria

Estimate the concentration produced by the interfering element in all affected samples.

SAMPLE AFFECTED	ELEMENT AFFECTED	SAMPLE CONC.	SAMPLE INTERFERANT AL	CA	FE	MG	ESTIMATED INTERF.

Action:

1. The sample data can be accepted without qualification if the sample concentrations of Al, Ca,Fe, and Mg are less than 50% of their respective levels in the ICS solution.
2. Estimate (J) positive results for affected elements for samples with levels of >50% or more.
3. Reject (R) positive results if the reported concentration is due entirely to the interferant.
4. Estimate (UJ) non-detected results for which false negatives are suspect.

V. MATRIX SPIKE (Form 5A)

Sample Number: ***MS-C***

1. Recovery Criteria

List the percent recoveries for analytes which did not meet the required criteria.

S - amount of spike added
SSR - spikes sample result
SR - sample result

ANALYTE	SSR	SR	S	%R	ACTION
anitmony	*76.7*	*0.0*	*123.2*	*62.3*	*esitmate conc.*
lead	*241.8*	*84.3*	*121.9*	*129.1*	*estimate conc.*
chromium	*101.9*	*30.8*	*48.9*	*145.2*	*estimate conc.*
copper	*133.3*	*105.7*	*61.8*	*44.7*	*estimate conc.*

Actions:

1. If the sample concentration exceeds the spike concentration by a factor of 4 or more, no action is taken.
2. If any analyte does not meet the %R criteria, follow the actions stated below:

	Percent Recovery		
	<30%	30-74%	>125%
Positive Sample Results	J	J	J
Non-Detected Results	R	UJ	A

2. Frequency Criteria

A. Was a matrix spike prepared at the required frequency? ***Yes***

B. Was a post digestion spike analyzed for elements that did not meet required criteria for matrix spike recovery? ***Not required***

VI. LABORATORY DUPLICATES (Form 6)

List the concentration of any analyte not meeting the criteria for duplicate precision.

ELEMENT	CRDL	SAMPLE #	DUPLICATE #	RPD	ACTION
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper		*105.7*	*60.6*	*54.3*	*estimate*
Iron		*15,241*	*7,198*	*71.7*	*estmate*
Lead	*0.5*	*4.4*	*2.6*	*52.1*	*estimate*
Magnesium					
Manganese		*91.0*	*69.7*	*26.5*	*estimate*
Mercury					
Nickel					
Potassium					
Selenium					
Silver					
Sodium					
Thallium					
Vanadium					
Zinc					
Cyanide					

Action:

1. Estimate (J) positive results for elements which have a RPD >20% for water and >35% for soils.
2. If sample results are less than 5x the CRDL, estimate (J) positive results for elements whose absolute difference is >CRDL. If both samples are non-detected, the RPD is not calculated (NC).

VII. FIELD DUPLICATES

List the concentrations of all analytes in the field duplicate pair. ***H and X***

ELEMENT	CRDL	SAMPLE #	DUPLICATE #	RPD	ACTION
Aluminum		*6,875*	*6,761*	*1.6*	
Antimony		*ND*	*7.3*		
Arsenic		*9.4*	*9.6*	*2.0*	
Barium		*155*	*193*	*22*	
Beryllium		*0.3*	*ND*		
Cadmium		*4.9*	*2.9*	*51*	
Calcium		*1,356*	*1,565*	*14.3*	
Chromium		*345*	*630*	*58*	
Cobalt		*5.5*	*4.5*	*20*	
Copper		*35.7*	*30.6*	*15.3*	
Iron		*18,642*	*12,290*	*41*	
Lead		*174*	*238*	*31*	
Magnesium		*1,503*	*1,749*	*15*	
Manganese		*160*	*122*	*50*	
Mercury		*1.9*	*1.4*	*27*	
Nickel		*14.9*	*10.2*	*37*	
Potassium		*393*	*436*	*10*	
Selenium		*ND*	*0.29*		
Silver		*0.6*	*1.0*	*50*	
Sodium		*51.5*	*51.4*	*0.2*	
Thallium		*ND*	*ND*		
Vanadium		*19.4*	*17.6*	*11.1*	
Zinc		*209*	*215*	*3*	
Cyanide		*0.6*	*0.5*	*18*	

Action:

1. Estimate (J) positive results for elements which have a RPD > 30% for water and > 50% for soils.
2. If sample results are less than 5x the CRDL, estimate (J) positive results for elements whose absolute difference is > 2xCRDL. If both samples are non-detected, the RPD is not calculated (NC).

VIII. LABORATORY CONTROL SAMPLE (Form 7)

List any LCS recoveries not within the 80-120% criteria and the samples affected.

DATE	ELEMENT	%R	ACTION	SAMPLES AFFECTED

Passed all validation criteria

Action:

	Percent Recovery		
	<50%	51-79%	>120%
Positive Results	R	J	J
Non-Detected Results	R	UJ	A

2. Frequency Criteria

A. Was an LCS analyzed for every matrix, digestion batch and every 20 samples? *Yes*

IX. FURNACE AA ANALYSIS

1. Duplicate Precision

X Duplicate injections and one point analytical spikes were performed for all samples, duplicate injections agreed within +- 20%.

Duplicate injections and/or spikes were not performed for the following samples/elements:

Duplicate injections did not agree within +-20% for samples/elements:

IX. FURNACE AA ANALYSIS (cont.)

2. Post Digestion Spike Recoveries

X Spike recoveries met the 85-115% recovery criteria for all samples.

Spike recoveries did not meet the 85-115% criteria but did not require MSA for the following samples/elements:

X MSA was used to quantitate analytical results when contractually required.

X Correlation coefficients >0.995, accept results

Correlation coefficients <0.995, for sample numbers/elements:

Method of standard addition (MSA) was not performed as required for samples/elements:

Actions:

1. Estimate (J) positive results if duplicate injections are outside +-20% RSD or CV.
2. If the sample absorbance is <50% of post digestion spike absorbance the following actions should be applied:

	Percent Recovery		
	<10%	11-84%	>115%
Positive Result	J or R	J	J
Non-detected	R	UJ	A

3. Estimate (J) sample result if MSA was required and not performed.
4. Estimate (J) sample result if correlation coefficient was <0.995.

X. ICP SERIAL DILUTION ANALYSIS (Form 9)

Serial dilutions were performed for each matrix and results of the diluted sample analysis agreed within ten percent of the original undiluted analysis.

Serial dilutions were not performed for the following:

X Serial dilutions were performed, but analytical results did not agree within 10% for analyte concentrations greater than 50x the IDL before dilution.

Report all results that do not meet the required laboratory criteria for ICP dilution.

ELEMENT	IDL	50xIDL	SAMPLE #	DUPLICATE #	%D	ACTION
Aluminum						
Barium						
Beryllium						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead			*249.2*	*220.5*	*11.5*	*none*
Magnesium						
Manganese						
Nickel						
Potassium						
Silver						
Sodium						
Vanadium						
Zinc						

Action:

1. Estimate (J) positive results if %D > 15.

XI. DETECTION LIMITS (Form 10)

1. Instrument Detection Limits

X Instrument detection limit results were present and found to be less than the contract required detection limits (CRDL).

IDLs were not included in the data package

IDLs were present, but the criteria was not met for the following elements:

2. **Reporting Requirements**

A. Were sample results on Form I reported down to the IDL not the CRDL for all analytes? *Yes*

B. Were sample results that were analyzed by ICP for Se, Tl, or Pb at least 5x IDL? *Yes*

C. Were sample weights, volumes, and dilutions taken into account when reporting detection limits on Form I? *Yes*

If No, the data may be affected. Use professional judgement to determine the severity of the effect and quality of the data.

XII. SAMPLE QUANTITATION

X Sample results fall within the linear range for ICP and within the calibrated range for all other parameters.

Sample results were beyond the linear range/calibration range of the instrument for the following elements:

1. Sample Calculation:

ICP:

AA Furnace:

Mercury:

Cyanide:

Sample C was a resample

DP-5

23-1

Metals SDG-20

	Collected	Received	Analysis
FB	10/05	10/6	TAL
A	↓	↓	Pb
B			Pb
C			TAL
D			Pb
E			Pb
F			Pb
G			Pb
H			TAL
X			TAL
SL-2	10/19	10/19	Pb
SL-17/18	↓	↓	Pb
SL-19			Pb
SL-20			Pb

ICAL + CCAL

ICP Passed QC criteria for %R

Furnace passed QC Criteria

Cold vapor passed QC

Cyanide passed QC

Calculations for %R Correct.
No Transcription errors

CRDL %R ± 20% (no validation Criteria)
TRUE std [X] 2x CRDL
No transcription errors

LCS Form 7 Passed QC Criteria ±20%

ICP & Serial dilutions %10L D and sample Conc > 50X the IDL

Failed SL-20 Lead "E"

~~Cadmium~~

Correlation Coefficient > 0.995 for Hg + CN

Field dups - H + X RPD > 50% if [X] > 5x CRDL
±4x CRDL if [X] < 5x CRDL

J positives

~~Chromium~~ 5% RPD

CMSD 1.503 grams volume = 0.2 Liters

manganese = 15 $\frac{ug}{L}$

$$\frac{15 \frac{ug}{L} \times 0.2 \text{ Liters}}{1.503 \text{ grams} \times .815} = 2.4 \text{ ug/g or mg/kg}$$

Blanks - Form 3

Pass QC Criteria < CRDL

No Transcription errors

ICP interference Form 4

- ± 20 % except Al, Ca, Fe, Mg
- Performed beginning and end of run
- Twice every eight hours
- Only applicable if concentration of Al, Ca, Fe + Mg are ≥ concentration in original Sample
- No Transcription errors

Pass QC Criteria

Spike Sample recovery Form 5A CMS Sample

± 25 %

Failed	antimony	62.3	J positives VS nondetects
	Chromium	145.2	J positives
	Copper	44.7	J positives VS non detects
	Lead	129.1	J positives

applicable if SA ≥ 1/4 SR

Sample Duplicate - Form 6 C MSD

IF [x] > 5x CRDL, ± 20% (± 35 For soils)

IF [x] < 5x CRDL, ± CRDL

IF [x] < CRDL Then NO Comparison

Failed for:

J positives	Copper	54	Lead 129
	Iron	72	Manganese ~~26~~

Qualifiers

Sample

A — Qualify Lead as "J" failed spike + duplicate precision

B — Same as A

C — Qualify Antimony UJ For spike
Chromium J spike, Copper J spike + dup
IRON J duplicate, Lead J spike + dup

G — same as B

H — Antimony UJ spike, Chromium J spike + Field dup
Copper J spike + dup IRON J dup, Lead J spike + dup

SL-2 — Same as G

SL-17/18 — Same as SL-2

SL-19 — Same as SL-17/18

SL-20 — Same as SL-19

X — Same as H

FB — ~~Antimony UJ, Copper UJ Spike~~

REVIEW OF ORGANIC
CONTRACT LABORATORY PACKAGE

Site Name: ***Wells G & H Superfund Site***
Reference Number:

The hard copied data package received at RETEC has been reviewed and the quality assurance and performance data summarized. The data review included:

Case No.: ***E1116-12***	SAS No.:	Sample Dates: ***11/15/94***
SDG No.: ***23-1***	Matrix: ***soil***	Shipping Date: ***11/15/94***
No. of Samples: ***12***		Date Rec'd by Lab: ***11/16/94***

The CLP SOW for requires that specific analytical work be done and the general criteria used to determine the performance were based on the examination of:

- Data Completeness	- Matrix Spike/Matrix Spike Dup.
- Holding Times	- Field Duplicates
- GC/MS Tuning	- Internal Std Performance
- Calibrations	- Pest. Inst. Performance
- Blanks	- Compound Identification
- Surrogate Recoveries	- Compound Quantitation

Overall comments:

Data package was acceptable

Definition of qualifiers:

A = Acceptable data.
J = Approximate data due to quality control criteria.
R = Reject data due to quality control criteria.
U = Compound not detected.
UJ = Compound detection limit is approximate

Reviewer: Date:

I. DATA COMPLETENESS

Missing Information, Date Lab Contacted, Date Received: ***Data package complete***

II. HOLDING TIMES:

		VOA	BNA		Pest.	
Sample ID	**Date Sampled**	**Date Anal.**	**Date Extr.**	**Date Anal.**	**Date Extr.**	**Date Anal.**
DP-5	*11/15/94*				*11/21/94*	*12/14/94*
DP-7	*11/15/94*	*11/25/94*	*11/17/94*	*12/20/94*	*11/21/94*	*12/14/94*
DP-G	*11/15/94*		*11/17/94*	*12/20/94*		
DP-15	*11/15/94*				*11/21/94*	*12/14/94*
DP-15a-1	*11/15/94*				*11/21/94*	*12/14/94*
DP-15a-2	*11/15/94*				*11/21/94*	*12/14/94*
FB-15	*11/15/94*	*11/25/94*	*11/17/94*	*12/20/94*	*11/21/94*	*12/14/94*
TB-15	*11/15/94*	*11/25/94*				
SL-02	*11/15/94*	*11/25/94*				
SL-17/18	*11/15/94*	*11/25/94*				
SL-19	*11/15/94*	*11/25/94*				
SL-20	*11/15/94*	*11/25/94*				
DP-I	*11/15/94*	*11/25/94*	*11/17/94*	*12/20/94*	*11/21/94*	*12/14/94*
DC-11	*11/15/94*	*11/25/94*	*11/17/94*	*12/20/94*	*11/21/94*	*12/14/94*

VOA:
- Unpreserved: aromatics within 7 days, non-aromatics within 14 days of sample collection.
- Preserved: Both within 14 days of sample collection.
- Soils: Both within 10 days of sample collection.

BNA & Pest:
- Extracted within 7 days, analyzed within 40 days, soils and water.

Action: If holding times are exceeded all positive results are estimates (J) and non-detects are estimated (UJ). If holding times are grossly exceeded then data unusable (R).

III. GC/MS TUNING (Form 5B)

The DFTPP performance results for semi-volatile analysis were reviewed and found to be within the specified criteria (page D-40/SV).

If no, samples affected:

Tunning passed all SVOC QC criteria

Calculations:

The BFB performance results for volatile organic analysis were reviewed and found to be within the specified criteria (page D-25/VOA) Form 5A.

If no, samples affected:

Passed validation critieria

Calculations:

IVA. VOLATILE CALIBRATION VERIFICATION (Form 6A, 7A)

Date of Initial Calibration: *8/30 + 8/31/94*
Dates of Continuing Calibration: *11/25, 11/26/94*
Instrument ID: *MACH 1*
Matrix/Level: *Soil/low*

Date	Criteria Out RF, %RSD, %D	Compound (value)
8/30	*RSD*	*methylene chloride (35.1)*
		acetone (69.9)
		2-butanone (37)
8/31	*RSD*	*methylene chloride (45)*
		acetone (68)

Calculations:

Initial calibration uses 5 concentrations.
All Avg. RF's and RF's must be >0.05; if <0.05, mark positive results (J) and non-detects (R) (page D-27/VOA).
All %D's must be <25%; if >25% mark detects (J) and non-detects (UJ)
Some compounds must meet RRF of 0.01 (page D-28/VOA).

IVB. SEMI-VOLATILE CALIBRATION VERIFICATION (Form 6B, 7B)

Date of Initial Calibration: *12/06/94*
Dates of Continuing Calibration: *12/20, 12/22/94*
Instrument ID:
Matrix/Level: *Soil/low*

Date	Criteria Out RF, %RSD, %D	Compound (value)

Passed validation criteria

Calculations:

All Avg. RF's and RF's must be >0.05; if <0.05, mark positive results (J) and non-detects (R) page D-34/SV.
All %RSD's must be <30%; if >30% mark detects (J) and non-detects (UJ) if <50%
All %D's must be <25%; if >25% mark detects (J) and non-detects (UJ)
Tables for RRF, %D, and %RPD on pages D-46,47/SV.

V. BLANK ANALYSIS RESULTS

Laboratory Blanks:

Date	Lab ID	Matrix	Compound	Concentration

All method blank results were non-detect

Equipment and Field Blanks:

Date	Lab ID	Matrix	Compound	Concentration

All field and trip blank results were non-detect

If concentration < CRQL, report CRQL
If concentration > CRQL, but less than action level (5x or 10x), report as (U)
If concentration > than action level, report as (R)

VI. SURROGATE RECOVERIES (Form 2C, 2E)

Sample matrix:

	VOA			B/N				
Samples	TOL	BFB	DCF	NBZ	FBP	TPH	PHL	2FP	TBP
	Pass criteria			*Pass criteria*				

Calculations:

	Water	Soil	
TOL = Toluene-d_8	88-110	84-138	Page D-50/VOA
BFB = Bromofluorobenzene	86-115	59-113	
DCF = 1,2 Dichloroethane-d_8	76-114	70-121	
NBZ = Nitrobenzene-d_5	35-114	23-120	Page D-56/SV
FBP = 2-Flurobiphenyl	43-116	30-115	
TPH = Terphenyl-d_{14}	33-141	18-137	
PHL,2FP,TBP	60-150	60-150	

VII. FIELD DUPLICATE PRECISION

Sample matrix: *soil* Sample Nos.: ***15a-1 and 15a-2*** PCBs only

List compounds that do not meet the following RPD criteria:

- An RPD of $<30\%$ for water
- An RPD of $<50\%$ for soil

Fraction	Compound	Sample Conc.	Dup Conc.	RPD
Soil	*aroclor 1254*	*144*	*360*	*85*
	aroclor 1260	*83*	*198*	*82*

If the results for any compound do not meet the RPD, then flag positive results as estimated (J).

VIII. INTERNAL STANDARD PERFORMANCE (Form 8A, 8B)

List the internal standard areas of samples that do not meet the criteria of +100% or -50% of the internal standard area on the continuing calibration standard.

Sample ID	Date	I.S. Out	I.S. Area/RT	Acceptable Range	Action

VOC passed criteria

SVOC passed criteria

Positive results are flagged with (J)
Non-detects are flagged with (UJ)
Page D-43, 51/SV
Page D-47/VOA

IX. MATRIX SPIKE/MATRIX SPIKE DUPLICATE (Form 3C)

Must be performed for each group of samples of a similar matrix following the frequency:

- Each case of 20 field samples
- Each 20 field samples in a case
- Each group of soil samples of a similar concentration.
- Each 14 calendar day period which field samples were received.

List the samples not within RPD:

Date	Sample No.	Compound	%REC	Limit
11/25/94	*DP-7*	*trichloroethene*	*1,529*	*62-132*
		toluene	*1,835*	*59-139*
12/20/94	*DP-7*	*1,4-dichlorobenzene*	*4*	*28-104*
		N-nitro-di-n-propylamine	*17*	*41-126*
		1,2,4-trichlorobenzene	*14*	*38-107*

f any recoveries < 10%, flag positive results (J), flag non-detects (UJ). RPD for VOAs page D-50/VOA, SV on page D-57/SV, and Pest. on page D-58/pest.

X. PESTICIDE INSTRUMENT PERFORMANCE

List DDT retention times less than 12 minutes.

Standard ID	Date/Time	RT	Samples Affected	Actions

All 4,4-DDT retension times > 12 minutes

If retention time < 12 min., reexamine for good separation, if not flag affected compounds (R)

List compounds which are not within the established windows.

Compound	Date/Time	RT	RT Window	Samples Affected

Must be within 0.02 min. of the mean RT (page D-47/PEST)
If out of RT window and no peaks in expected RT window then its ok.
If out of RT window and peaks are in expected RT window, recalculate conc. using different STDs.

X. PESTICIDE INSTRUMENT PERFORMANCE (cont.) (Form 7D)

DDT and Endrin Degradation. List the standards which have a DDT or Endrin breakdown >20%.

Standard ID	DDT or Endrin	% Breakdown	Samples Affected

Passed validation criteria

Calculations:

If breakdown >20%, flag positive results (J). If DDT is not present but DDD or DDE are, flag (R). Flag all positive results for DDD and/or DDE (J).

If breakdown >20%, flag positive results (J). If Endrin is not present but endrin aldehyde and/or endrin ketone are, flag (R). Flag all positive results for E. aldehyde and/or E. ketone (J).

XI. SURROGATE RECOVERIES (Form 2F)

Sample matrix:

	Column 1		Column 2	
Samples	TCX	DCB	TCX	DCB

Passed validation criteria

Calculations:

	QC Limits
TCX = Tetrachloro-m-xylene	60-150
DCB = Decachlorobiphenyl	60-150

XII. PESTICIDE CALIBRATION (Form 6E)

Initial Calibration: Must be calibrated with 3 conc. Calibration factors on page D-41/pest. RSD on page D-43/pest. RSD ,15% for compounds on page D-43/pest.

List compounds which did not meet RSD <10% or 15%

Date	Compound	Mean	%RSD	Column	Samples Affected

Passed validation criteria

Calculations:

Flag all positive results (J)

Analytical Sequence (Form 8D):

Did the lab follow the correct sequence every 72 hours? If no, data may be affected.

Correct sequence followed

XIII. PESTICIDE CALIBRATION (Form 7D, 7E)

Continuing Calibration:

List the compounds which did not meet the %D of < 15% on quantitation or 20% on confirmation for continuing calibration.

Date	Compound	%D	Column	Sample Affected

Passed validation criteria

IX. GPC and Florisil Clean-Up (Form 9A, 9B)

List compounds which did not use florisil clean-up or surpassed validation criteria:

Date	Sample No.	Compound	%REC
	GPC	*gamma-BHC*	*122*
		aldrin	*121*

QC Limits on florisil %REC = 80-120%
QC Limits on GPC %REC = 80-110%
If %REC < 80%, qualify positive results (J) and non-detects (UJ). If %REC = 0, then (R) qualify non-detects

XV. MATRIX SPIKE/MATRIX SPIKE DUPLICATE (Form 3F)

Must be performed for each group of samples of a similar matrix following the frequency:

- Each case of 20 field samples
- Each 20 field samples in a case
- Each group of soil samples of a similar concentration.
- Each 14 calendar day period which field samples were received.

List the samples not within RPD:

Date	Sample No.	Compound	%REC	Limit

Passed validation criteria

XVI. SAMPLE QUANTITATION

VOA:

BNA:

PEST/PCB:

SDG-231

VOA

Surrogates - Passed QL Criteria

SL-17/18 DCE = 103%

$$\frac{196389 \times 50\ ug/L}{166302 \times 1.145} = 51.57/50\ ug/L \times 100 = 103\%$$

DFI DL TOL = 100%

$$\frac{273360 \times 5\ ug/L}{210468 \times 1.189} = 5.46/5 \times 100 = 109\%$$

BFB = 99

$$\frac{137302 \times 5\ ug/L}{210468 \times 0.854} = 3.82/5 \times 100 = 76.4\%$$

Internal Stds - Passed QL Criteria

No Typos.

ICAL 9/30/94 1256 hrs

1-25 ug/L

RRFs > 0.05 RSDs < 30% MC = 35 acetone = 70

2-butanone = 37

calculations $\overline{RRF}$ + RSDs ok

RRF_{50} acetone = 0.614

$$\frac{12400 \times 5\ ug/L}{50478 \times 2\ ug/L} = 0.614$$

ICal 8/3/94 5-100 ug/L

RRFs > 0.05 RSDs < 30 mc = 45 acetone 69

Calculations $\overline{RRF} \times RSD$ ok

RRF_{75} bromoform = 0.375

$$\frac{55730 \times 50\ ug/L}{99294 \times 75\ ug/L} = 0.375$$

CCal 11/26/94 00:19 hrs

RRFs > 0.05 %Ds < 25%

%D cal ok

RRF_5 7chan = 1.564

$$\frac{473962 \times 5}{303069 \times 5} = 1.564$$

CCAL 11/25/94 10:10 hr

RRFs > 0.05 %Ds < 25%
%D calculated ok

RRF_{50} Vinyl chloride = 0.527

$$\frac{83762 \times 50}{15\,834 \times 50} = 0.527$$

MS/MSD DP-7
Failed MS Trichloroethene 1,529
Toluene 1,835
MSD Trichloro-ethene - 114

method blank
VBLK01 02 are clean

Field blank = clean
Trip blank = clean
Field dup 15-1 15-2 PCBs only.

Tuning - Pass Criteria

11/25/94 m/z 177 = 6%
287/4751 × 100 = 6%

VOA Qualifiers

DP-1 - Reject (R) concentration Trichloroethene for surpassing calibration curve (E)

DP-7 - same as DP-1

DP-7 DL - J Trichloroethene for poor ms/msd

SVOC - ok

Pest/PCBs

15a-1 J aroclors 1254 + 1260 for poor field dup

15a-2 J aroclors 1254 + 1260 poor field dups.

Metals - ok

SDG - 23 SVOCs

Surrogates NBZ DCB

DP-7 MS 5 4

All others Passed QC criteria

DP-4 FBP = 47%

$$\frac{8566053 \times 20\ ug/L}{10526123 \times 0.78} = 23.25\ ug/L \Big/ 50 \times 100 = 4$$

Internal STDs Passed QC criteria - except:

DC PRY = 2763274

DP-4 PRY = 3312672

DP-7 PRY = 3752001

DP-7 MSD PRY = 2578302

DC RE PRY = 3084444

DP-4 RE PRY = 3701124

DP-7 RE PRY = 3936897

NO TMPCs

ICAL 12/04/99

RRFs > 0.05 RSDs < 30% = All Pass

RRF + RSDs Calculated Correctly

RRF_{80} Chrysene = 1.173

$$\frac{5785628 \times 20}{2466400 \times 40} > 1.173$$

CCAL 12/20 12:59

12RFs > 0.05 %D < 25
%D calculated OK

RRF_{50} Benzo(a)pyrene = 1.802

$$\frac{2910782 \times 20}{1347949 \times 25} = 1.802$$

ccal 12/21 14:18
RRFs > 0.05 %Ds < 25
%D calculated OK

RRF_{50} acenaphthene 0.430

$$\frac{3740546 \times 20}{5095474 \times 25} = 0.430$$

Tuning - Passed QC criteria

m/z 69 = 47.6%
60399 / 126774 x 100 = 47.6

MS/MSD DP-7
Failed 1,4-Dichlorobenzen 4%
N-Nitroso-di-n-propylamine 17%
1,2,4-Trichlorobenzene 14%

Field dup - only PCBs
Method blanks - clean
Field blank - clean

CN
PAH

Pest/PCBs

Surrogates - Passed QC criteria

DP-1 TCX, = 70

FOUND $\frac{155350 \times 5000\ ul \times 2\ GPC}{2770525 \times 2\ ul \times .73 \times 31.5\ g} = 12.19$

added $\frac{2\ ml \times 0.2}{31.5 \times .73} \times 1000 = 17.39$

$12.19 / 17.39 \times 100 = 70$

MS/MSD DP-7

Endrin MSD 46 RPD Limit 42-139

Calibration Factors ICAL RSD ≤ 10 ccal ≤ 20

DB1701 44-DDT mid = 1947537.5

$155803 / 0.08\ ng = 1947537.5$ ✓

Cal Factors

DB608 RSDs < 20 2 < 30%

aldrin LOW = 4312800

43128/0.01 ng = 4312800

PCBs

DB17-01 Aroclor 1242 peak 2 = 98285

19657/0.2 ng = 98285

DB608 Aroclor 1248 = peak 3 = 152925

30535 / 0.2 ng = 152925

Percent Resolution Form 6G

Pass -

endrin / 4,4-DDT breakdown % RPD < 25%

Pass

PEM04 DB608

endrin breakdown = 11.88

endrin aldehyde = 13207 / 2419037.5 = 0.0054
endrin ketone = 21407 / 3334912.5 = 0.0064

$$\frac{0.0054 + 0.0064}{0.10} \times 100 = 11.80$$

Cal Ver Verification 7E RPD ≤ 25%

Passed

Analytical Sequence - Pass

Florisil Check - Pass

GPC Check

gamma BHC -	122	80 - 110
aldrin	121	

method blanks - clean
Field blank - clean

Field dup:	15a-1	15a-2	RPD
aroclor 1254	144	360	905
aroclor 1260	83	198	82

REVIEW OF INORGANIC
CONTRACT LABORATORY PACKAGE

Case Number:
Laboratory: ***NETL***
SDG: ***23***
SOW:
Completion Date: ***1/06/95***

Site Name: ***Wells G & H Superfund Site***
No. of Samples/Matrix: ***soil***
Reviewer: ***RETEC***
Reviewer's Name: ***R. Roat***

DATA ASSESSMENT SUMMARY

		ICP	AA	Hg	Cyanide
1.	Holding Times	O	O	O	O
2.	Calibrations	O	O	O	O
3.	Blanks	O	O	O	O
4.	ICS	O	O	O	O
5.	LCS	O	O	O	O
6.	Duplicate Analysis	O	O	O	O
7.	Matrix Spike	X	O	O	O
8.	Serial Dilution	X	-	-	-
9.	Overall Assessment	O	O	O	O

O = Data had no problems or qualified due to minor problems
M = Data qualified due to major problems
Z = Data unacceptable
X = Problems, but do not affect data

Action Items:

I. HOLDING TIMES

Sample ID	Date Sampled	Hg Analysis Date	Cyanide Analysis Date	Metal Analysis Date	Action
FB	*11/15/94*			*11/15/94*	
DC	*11/15/94*			*11/15/94*	
DC-MS	*11/15/94*			*11/15/94*	
DC-MSD	*11/15/94*			*11/15/94*	

Metals - 180 days from collection preserved pH < 2
Mercury - 28 days from collection preserved pH < 2
Cyanide - 14 days from collection preserved pH > 12
If holding times are exceeded all positive results are estimated (J) and non-detects are estimated (UJ).

II. INSTRUMENT CALIBRATION (Form 2A)

1. Recovery Criteria - List the analytes which did not meet the percent recovery (%R) criteria for initial and continuing calibration.

Date	ICV/CCV	Analyte	%R	Action	Samples Affected

Passed all validation criteria

Action:

	Accept	Estimate (J)	Reject (R)
Metals:	90-110%	75-89%, 111-125%	<75%, >125%
Mercury:	80-120%	65-79%, 121-135%	<65%, >135%
Cyanide:	85-115%	70-84%, 116-130%	<70%, >130%

2. Analytical Sequence

A. Did the laboratory use the proper number of standards for calibration as described in the SOW? ***Yes***

B. Were calibrations performed at the beginning of each analysis? ***Yes***

C. Were calibration standards analyzed at the beginning of sample analysis and at a minimum frequency of ten percent or every two hours during analysis? ***Yes***

D. Were the correlation coefficient for the calibration curves for AA, Hg, and CN- >0.995? ***Yes***

E. Was a standard at 2xCRDL analyzed for all ICP analysis? ***Yes***

If No, the data may be affected. Use professional judgement to determine the severity of the effect and quality of the data.

III. BLANK ANALYSIS RESULTS (Form 3)

List the blank contamination.

1. Laboratory Blanks

DATE	ICB/CCB	PREP BL	ANALYTE	CONC.

Passed all validation criteria

2. **Equipment/Trip Blanks:** *Not applicable to soils*

DATE	EQUIP BL #	ANALYTE	CONC.

No contaminants detected above CRDL

3. **Frequency Requirements**

A. Was a preparation blank analyzed for each matrix, for every 20 samples and for each digestion batch? ***Yes***

B. Was a calibration blank run every 10 samples or every 2 hours? ***Yes***

If No, the data may be affected. Use professional judgement to determine the severity of the effect and quality of the data.

III. BLANK ANALYSIS RESULTS (cont)

Actions: ***Passed validation criteria***

The action level for any analyte is equal to five times the highest concentration of that elements contamination in any blank. No positive results should be reported unless the concentration of the analyte exceeds the Action Level (AL).

1. When the concentration is greater than the IDL, but less than the AL, report the sample concentration detected with a U.

2. When the sample concentration is greater than the AL, report the sample concentration unqualified.

ELEMENT	MAX CONC.	AL UNITS

IV. ICP INTERFERENCE SAMPLE (Form 4)

1. Recovery Criteria

List any element in the ICS AB solution which did not meet the criteria for %R

	Percent Recovery		
	<50%	50-79%	>120%
Positive sample results	R	J	J
Non-detected samples	R	UJ	A

DATE	ELEMENT	%R	ACTION	SAMPLES AFFECTED

Passed all validation criteria

2. **Frequency Requirements**

A. Were Interference QC samples run at the beginning and end of each sample analysis run or a minimum of twice per eight hours? ***Yes***

If No, the data may be affected. Use professional judgement to determine the severity of the effect and quality of the data.

IV. ICP INTERFERENCE SAMPLE (cont)

3. Report the concentration of any element detected in the ICS solution > 2xIDL that should not be present.

ELEMENT	CONC. DETECTED IN THE ICS	CONC. OF INTERFERENTS IN THE ICS			
		AL	CA	FE	MG

Passed all validation criteria

Estimate the concentration produced by the interfering element in all affected samples.

SAMPLE AFFECTED	ELEMENT AFFECTED	SAMPLE CONC.	SAMPLE INTERFERANT AL	CA	FE	MG	ESTIMATED INTERF.

Action:

1. The sample data can be accepted without qualification if the sample concentrations of Al, Ca,Fe, and Mg are less than 50% of their respective levels in the ICS solution.
2. Estimate (J) positive results for affected elements for samples with levels of >50% or more.
3. Reject (R) positive results if the reported concentration is due entirely to the interferant.
4. Estimate (UJ) non-detected results for which false negatives are suspect.

V. MATRIX SPIKE (Form 5A)

Sample Number: ***MS-C***

1. Recovery Criteria

List the percent recoveries for analytes which did not meet the required criteria.

S - amount of spike added
SSR - spikes sample result
SR - sample result

ANALYTE	SSR	SR	S	%R	ACTION
lead	***114.3***	***0.00***	***116***	***98.5***	***none***

Actions:

1. If the sample concentration exceeds the spike concentration by a factor of 4 or more, no action is taken.
2. If any analyte does not meet the %R criteria, follow the actions stated below:

	Percent Recovery		
	< 30%	30-74%	> 125%
Positive Sample Results	J	J	J
Non-Detected Results	R	UJ	A

2. Frequency Criteria

A. Was a matrix spike prepared at the required frequency? ***Yes***

B. Was a post digestion spike analyzed for elements that did not meet required criteria for matrix spike recovery? ***Not required***

VI. LABORATORY DUPLICATES (Form 6)

List the concentration of any analyte not meeting the criteria for duplicate precision.

ELEMENT	CRDL	SAMPLE #	DUPLICATE #	RPD	ACTION
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead		0.00	0.00		none
Magnesium					
Manganese					
Mercury					
Nickel					
Potassium					
Selenium					
Silver					
Sodium					
Thallium					
Vanadium					
Zinc					
Cyanide					

Action:

1. Estimate (J) positive results for elements which have a RPD >20% for water and >35% for soils.
2. If sample results are less than 5x the CRDL, estimate (J) positive results for elements whose absolute difference is >CRDL. If both samples are non-detected, the RPD is not calculated (NC).

VII. FIELD DUPLICATES : *No duplicates taken*

List the concentrations of all analytes in the field duplicate pair. ***H and X***

ELEMENT	CRDL	SAMPLE #	DUPLICATE #	RPD	ACTION
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Magnesium					
Manganese					
Mercury					
Nickel					
Potassium					
Selenium					
Silver					
Sodium					
Thallium					
Vanadium					
Zinc					
Cyanide					

Action:

1. Estimate (J) positive results for elements which have a RPD >30% for water and >50% for soils.
2. If sample results are less than 5x the CRDL, estimate (J) positive results for elements whose absolute difference is >2xCRDL. If both samples are non-detected, the RPD is not calculated (NC).

VIII. LABORATORY CONTROL SAMPLE (Form 7)

List any LCS recoveries not within the 80-120% criteria and the samples affected.

DATE	ELEMENT	%R	ACTION	SAMPLES AFFECTED

Passed all validation criteria

Action:

	Percent Recovery		
	<50%	51-79%	>120%
Positive Results	R	J	J
Non-Detected Results	R	UJ	A

2. Frequency Criteria

A. Was an LCS analyzed for every matrix, digestion batch and every 20 samples? *Yes*

IX. FURNACE AA ANALYSIS

1. Duplicate Precision

Duplicate injections and one point analytical spikes were performed for all samples, duplicate injections agreed within +- 20%.

Duplicate injections and/or spikes were not performed for the following samples/elements:

Duplicate injections did not agree within +-20% for samples/elements:

IX. FURNACE AA ANALYSIS (cont.)

2. Post Digestion Spike Recoveries

Spike recoveries met the 85-115% recovery criteria for all samples.

Spike recoveries did not meet the 85-115% criteria but did not require MSA for the following samples/elements:

MSA was used to quantitate analytical results when contractually required.
Correlation coefficients >0.995, accept results
Correlation coefficients <0.995, for sample numbers/elements:

Method of standard addition (MSA) was not performed as required for samples/elements:

Actions:

1. Estimate (J) positive results if duplicate injections are outside +-20% RSD or CV.
2. If the sample absorbance is $<50\%$ of post digestion spike absorbance the following actions should be applied:

	Percent Recovery		
	$<10\%$	11-84%	$>115\%$
Positive Result	J or R	J	J
Non-detected	R	UJ	A

3. Estimate (J) sample result if MSA was required and not performed.
4. Estimate (J) sample result if correlation coefficient was <0.995.

X. ICP SERIAL DILUTION ANALYSIS (Form 9)

Serial dilutions were performed for each matrix and results of the diluted sample analysis agreed within ten percent of the original undiluted analysis.

X Serial dilutions were not performed for the following:

Lead: None detected in sample

Serial dilutions were performed, but analytical results did not agree within 10% for analyte concentrations greater than 50x the IDL before dilution.

Report all results that do not meet the required laboratory criteria for ICP dilution.

ELEMENT	IDL	50xIDL	SAMPLE #	DUPLICATE #	%D	ACTION
Aluminum						
Barium						
Beryllium						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Magnesium						
Manganese						
Nickel						
Potassium						
Silver						
Sodium						
Vanadium						
Zinc						

Action:

1. Estimate (J) positive results if %D > 15.

XI. DETECTION LIMITS (Form 10)

1. Instrument Detection Limits

X Instrument detection limit results were present and found to be less than the contract required detection limits (CRDL).

IDLs were not included in the data package

IDLs were present, but the criteria was not met for the following elements:

2. **Reporting Requirements**

A. Were sample results on Form I reported down to the IDL not the CRDL for all analytes? *Yes*

B. Were sample results that were analyzed by ICP for Se, Tl, or Pb at least 5x IDL? *Yes*

C. Were sample weights, volumes, and dilutions taken into account when reporting detection limits on Form I? *Yes*

If No, the data may be affected. Use professional judgement to determine the severity of the effect and quality of the data.

XII. SAMPLE QUANTITATION

X Sample results fall within the linear range for ICP and within the calibrated range for all other parameters.

Sample results were beyond the linear range/calibration range of the instrument for the following elements:

1. **Sample Calculation:**

ICP:

AA Furnace:

Mercury:

Cyanide:

SAMPLE DATA SUMMARY/DATA PACKAGE
INORGANICS ANALYSIS: WELLS G&H RD/RA
SDG: NETL18-1
WORK ORDER: NETL NETL18-1
PROJECT #: 3-0681-620

Prepared for:

Remediation Technologies, Inc.
9 Pond Lane
Concord, MA 01742

Report Date: October 24, 1994

CONTENTS

SDG NARRATIVE

The following samples were received from Remediation Technologies, Inc.:

SAMPLE ID	MATRIX	DATE RECIEVED	pH	ANALYSIS
FB	WATER	31-Aug-94		TAL
SL01	SOIL	31-Aug-94	4.8	TOTAL LEAD
SL03	SOIL	31-Aug-94	5.2	TOTAL LEAD
SL04	SOIL	31-Aug-94	5.5	TAL
SL05	SOIL	31-Aug-94	5.2	TOTAL LEAD
SL6/7	SOIL	31-Aug-94	5.4	TAL
SL08	SOIL	31-Aug-94	4.6	TAL,
SL08MS	SOIL	31-Aug-94	4.6	TAL,
SL08MSD	SOIL	31-Aug-94	4.6	TAL,
SL10/11	SOIL	31-Aug-94	6.0	TOTAL LEAD
SL12	SOIL	31-Aug-94	5.8	TOTAL LEAD
SL13	SOIL	31-Aug-94	5.1	TOTAL LEAD
SL14	SOIL	31-Aug-94	5.5	TOTAL LEAD
SL15	SOIL	31-Aug-94	5.0	TOTAL LEAD
SL25	SOIL	31-Aug-94	5.8	TOTAL LEAD

These fifteen samples constitute Sample Delivery Group NETL18-1.

Custody records for this group follow this narrative.

The acronym "TAL" indicates the EPA TARGET ANALYTE LIST AS DOCUMENTED IN:

Contract Laboratory Program Statement of Work for Inorganics Analysis, USEPA, DOC# ILM03.0 (92/93).

The analytical methods described in the statement of work were used in performing the analysis and the data forms were completed as described in the deliverables section.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness.

_____

Mark H. Bishop
Laboratory Director
New England Testing Laboratory, Inc

CUSTODY RECORDS

No. 073

CHAIN OF CUSTODY RECORD

E0831-02

PROJ. NO.	PROJECT NAME
8-0647-630	Wildwood

SAMPLERS: Carl LaCividano

RECEIVING LABORATORY: NCTL

SAMPLE NO.	DATE	TIME	SAMPLE LOCATION	NO. OF CONTAINERS	TAL/TCL full list	Mixed-contaminants	soil VOCs	REMARKS
TB 8-30-94	8-30-94	—	Trip Blank	1			X	Analyze trip blank water sample for soil VOCs
SL-6/7 8-30-94		3:00	Sludge location SL-6/7	1	X			
SL-04 8-30-94		12:00	Sludge location SL-04	1	X			
SL-08 8-30-94		2:25	Sludge location SL-08	1	X			
SL-08 8-30-94 MS		2:26	MATRIX Spike Sludge location SL-08	1	X			
SL-08 8-30-94 MSD		2:30	MATRIX Spike Duplicate SL-08	1	X			
FB 8-30-94		—	Field Blank	6	X			
SL-10/11 8-30-94		2:45	Sludge location 10/11	1		X		
SL-25 8-30-94		2:00	Sludge location SL-25	1		X		Dup of SL-12
SL-14 8-30-94		3:10	Sludge location SL-14	1		X		
SL-03 8-30-94		3:15	Sludge location SL-03	1		X		
SL-15 8-30-94		3:20	Sludge location SL-15	1		X		
SL-12 8-30-94		3:35	Sludge location SL-12	1		X		
SL-13 8-30-94		1:30	Sludge location SL-13	1		X		
SL-01 8-30-94		1:20	Sludge location SL-01	1		X		

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
	8-30-94 14:00	Via Fed Ex			
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received for laboratory by: (Signature)	Date/Time		

REMARKS: See work order NETL # for definition of mixed-contaminants, and soil VOCs

REMEDIATION TECHNOLOGIES INC

REMEDIATION TECHNOLOGIES
9 Pond Lane
Damonmill Square
Concord, MA 01742
(508) 371-1422
Fax# (508) 369-9279

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0005

No. 072 ● Pitt ● CHAIN OF CUSTODY RECORD ● E0831-02 ●

PROJ. NO.	PROJECT NAME
3-0547-630	Wildwood

SAMPLERS: Carl LaQuidara

RECEIVING LABORATORY: NETL

SAMPLE NO.	DATE	TIME	SAMPLE LOCATION	NO. OF CONTAINERS	Mixed contaminants	REMARKS
SL-05-8-30-94	8-30-94	11:59	Sludge location SL-05	1	X	

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Carl LaQuidara	8-30-94 1400	VIA Fed Ex			
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received for laboratory by: (Signature)	Date/Time		

REMARKS:

RETEC
REMEDIATION TECHNOLOGIES INC

REMEDIATION TECHNOLOGIES
9 Pond Lane
Damonmill Square
Concord, MA 01742
(508) 371-1422
Fax# (508) 369-9279

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9000

No. 069

E0909-09

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME
3-0947-630	Wildwood

SAMPLERS: Cmj LAQUIDARA

RECEIVING LABORATORY: NETL

SAMPLE NO.	DATE	TIME	SAMPLE LOCATION	NO. OF CONTAINERS	TCL Pesticides	TCL VOCs	Mixed-contaminant PCBs	PAHs	REMARKS
~~SL-08B~~									
SL-08B 9-8-94	9-8-94	9:00	Sludge location SL-08B	1	X				RUSH. (Next Wed)
SL-08B 9-8-94MS		9:05	SL-08B matrix spike	1	X				
SL-08B 9-8-94MSD		9:10	SL-08B matrix spike duplicate	1	X				
SL-12B 9-8-94		10:00	Sludge location SL-12	1		X			
~~FB-9-8-94~~			Field Blank		##				
SL-14B 9-8-94		10:40	Sludge location SL-14	1			X		

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
[signature]	Sept 8 1994	VIA Fed EX			
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received for laboratory by: (Signature)	Date/Time		
		Lynn Smith	9/9/94		

REMARKS:

2000

REMEDIATION TECHNOLOGIES INC

REMEDIATION TECHNOLOGIES
9 Pond Lane
Damonmill Square
Concord, MA 01742
(508) 371-1422
Fax# (508) 369-9279

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COVER PAGE

U.S. EPA - CLP

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: NEW ENGLAND TESTING LABORATORY Contract: G&H RD/RA

Lab Code: RI 010 Case No.: E0831-02 SAS No.: SDG No.: NETL-18-1

SOW No.: ILM02

EPA Sample No.	Lab Sample ID.
SL-01	SL-01
SL-03	SL-03
SL-04	SL-04
SL-05	SL-05
SL-6/7	SL-6/7
SL-08	SL-08
SL-08MS	SL-08MS
SL-08MSD	SL-08MSD
SL-10/11	SL-10/11
SL-12	SL-12
SL-13	SL-13
SL-14	SL-14
SL-15	SL-15
SL-25	SL-25
FIELD BLANK	FIELD BLANK

Were ICP interelement corrections applied? Yes/(No) ____

Were ICP backgrounds corrections applied? Yes/(No) ____

If yes-were raw data generated before application of background corrections? Yes/(No) ____

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

0009

Signature: Mark H. Bishop Name: Mark H. Bishop

Date: 10/25/94 Title: Laboratory Director

SAMPLE DATA

A: FORM 1

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

SL-01

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 SDG No.: NETL18-1

Matrix (soil/water): SOIL Lab Sample ID: SL-01

Level (low/med): MED Date Received: 08/31/94

% Solids: 76.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7439-92-1	Lead	19.0			P

Color Before: BROWN Clarity Before: _____ Texture: MEDIUM

Color After: YELLOW Clarity After: _____ Artifacts: _____

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

SL-3

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 SDG No.: NETL18-1

Matrix (soil/water): SOIL Lab Sample ID: SL-3

Level (low/med): MED Date Received: 08/31/94

% Solids: 84.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7439-92-1	Lead	125			P

Color Before: BROWN Clarity Before: _____ Texture: MEDIUM

Color After: YELLOW Clarity After: _____ Artifacts: _____

Comments:

U.S. EPA - CLP

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

SL-04

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 SDG No.: NETL18-1

Matrix (soil/water): SOIL Lab Sample ID: SL-04

Level (low/med): LOW Date Received: 08/31/94

% Solids: 88.1

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3543			P
7440-36-0	Antimony	8.90	U		P
7440-38-2	Arsenic	3.27			F
7440-39-3	Barium	15.9	B	E	P
7440-41-7	Beryllium	0.16	U		P
7440-43-9	Cadmium	0.62	B		P
7440-70-2	Calcium	544	B		P
7440-47-3	Chromium	11.9			P
7440-48-4	Cobalt	2.34	B		P
7440-50-8	Copper	8.12		*	P
7439-89-6	Iron	6261			P
7439-92-1	Lead	72.7			F
7439-95-4	Magnesium	879			P
7439-96-5	Manganese	45.4			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	7.03			P
7440-09-7	Potassium	172	B		P
7782-49-2	Selenium	0.33	B	W	F
7440-22-4	Silver	0.62	U		P
7440-23-5	Sodium	109	B		P
7440-28-0	Thallium	0.16	U		F
7440-62-2	Vanadium	6.56	B		P
7440-66-6	Zinc	24.7		*	P
	Cyanide	0.20	U		C

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

0014

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

SL-05

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 SDG No.: NETL18-1

Matrix (soil/water): SOIL Lab Sample ID: SL-05

Level (low/med): MED Date Received: 08/31/94

% Solids: 85.5

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7439-92-1	Lead	14.2			P

Color Before: BROWN Clarity Before: _____ Texture: MEDIUM

Color After: YELLOW Clarity After: _____ Artifacts: _____

Comments:

U.S. EPA - CLP

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

SL-6/7

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 SDG No.: NETL18-1

Matrix (soil/water): SOIL Lab Sample ID: SL-6/7

Level (low/med): LOW Date Received: 08/31/94

% Solids: 83.5

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3321			P
7440-36-0	Antimony	9.40	U		P
7440-38-2	Arsenic	2.87			F
7440-39-3	Barium	9.07	B	E	P
7440-41-7	Beryllium	0.16	U		P
7440-43-9	Cadmium	0.66	U		P
7440-70-2	Calcium	415	B		P
7440-47-3	Chromium	7.59			P
7440-48-4	Cobalt	1.32	B		P
7440-50-8	Copper	4.95		*	P
7439-89-6	Iron	3210			P
7439-92-1	Lead	8.74			F
7439-95-4	Magnesium	714	B		P
7439-96-5	Manganese	37.3			P
7439-97-6	Mercury	0.11	U		CV
7440-02-0	Nickel	4.95	B		P
7440-09-7	Potassium	117	B		P
7782-49-2	Selenium	0.35	B	W	F
7440-22-4	Silver	0.66	U		P
7440-23-5	Sodium	101	B		P
7440-28-0	Thallium	0.16	U	W	F
7440-62-2	Vanadium	5.61	B		P
7440-66-6	Zinc	16.8		*	P
	Cyanide	0.20	U		C

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: COLORLESS Clarity After: Artifacts:

Comments:

0016

U.S. EPA - CLP
1
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.
SL-08

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 SDG No.: NETL18-1

Matrix (soil/water): SOIL Lab Sample ID: SL-08

Level (low/med): LOW Date Received: 08/31/94

% Solids: 74.1

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5712			P
7440-36-0	Antimony	10.6	U		P
7440-38-2	Arsenic	11.0			F
7440-39-3	Barium	20.6	B	E	P
7440-41-7	Beryllium	0.19	B		P
7440-43-9	Cadmium	0.74	U		P
7440-70-2	Calcium	480	B		P
7440-47-3	Chromium	11.3			P
7440-48-4	Cobalt	1.12	B		P
7440-50-8	Copper	15.1		*	P
7439-89-6	Iron	5430			P
7439-92-1	Lead	51.3			P
7439-95-4	Magnesium	419	B		P
7439-96-5	Manganese	42.8			P
7439-97-6	Mercury	0.40			CV
7440-02-0	Nickel	1.86	U		P
7440-09-7	Potassium	65.8	U		P
7782-49-2	Selenium	0.93			F
7440-22-4	Silver	0.74	U		P
7440-23-5	Sodium	114	B		P
7440-28-0	Thallium	0.19	U		F
7440-62-2	Vanadium	18.2			P
7440-66-6	Zinc	32.9		*	P
	Cyanide	0.30	U		C

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

0017

U.S. EPA - CLP

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

SL-08MS

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 SDG No.: NETL18-1

Matrix (soil/water): SOIL Lab Sample ID: SL-08MS

Level (low/med): LOW Date Received: 08/31/94

% Solids: 73.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7506			P
7440-36-0	Antimony	111			P
7440-38-2	Arsenic	19.6			F
7440-39-3	Barium	651		E	P
7440-41-7	Beryllium	16.3			P
7440-43-9	Cadmium	16.4			P
7440-70-2	Calcium	704	B		P
7440-47-3	Chromium	81.5			P
7440-48-4	Cobalt	165			P
7440-50-8	Copper	88.1		*	P
7439-89-6	Iron	5761			P
7439-92-1	Lead	209			P
7439-95-4	Magnesium	524	B		P
7439-96-5	Manganese	205			P
7439-97-6	Mercury	1.89			CV
7440-02-0	Nickel	168			P
7440-09-7	Potassium	170	B		P
7782-49-2	Selenium	5.72			F
7440-22-4	Silver	13.6			P
7440-23-5	Sodium	121	B		P
7440-28-0	Thallium	9.95			F
7440-62-2	Vanadium	186			P
7440-66-6	Zinc	184		*	P
	Cyanide	36.4			C

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

0018

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

SL-08MSD

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 SDG No.: NETL18-1

Matrix (soil/water): SOIL Lab Sample ID: SL-08MSD

Level (low/med): LOW Date Received: 08/31/94

% Solids: 76.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6470			P
7440-36-0	Antimony	10.2	U		P
7440-38-2	Arsenic	10.2			F
7440-39-3	Barium	21.3	B	E	P
7440-41-7	Beryllium	0.18	B		P
7440-43-9	Cadmium	0.72	U		P
7440-70-2	Calcium	320	B		P
7440-47-3	Chromium	11.3			P
7440-48-4	Cobalt	1.26	B		P
7440-50-8	Copper	11.7		*	P
7439-89-6	Iron	5448			P
7439-92-1	Lead	41.8			P
7439-95-4	Magnesium	432	B		P
7439-96-5	Manganese	40.9			P
7439-97-6	Mercury	0.35			CV
7440-02-0	Nickel	3.59	B		P
7440-09-7	Potassium	63.5	U		P
7782-49-2	Selenium	0.96	B		F
7440-22-4	Silver	0.72	U		P
7440-23-5	Sodium	91.6	B		P
7440-28-0	Thallium	0.18	U		F
7440-62-2	Vanadium	18.1			P
7440-66-6	Zinc	26.5		*	P
	Cyanide	0.30	U		C

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

0019

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

SL-10/11

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 SDG No.: NETL18-1

Matrix (soil/water): SOIL Lab Sample ID: SL-10/11

Level (low/med): MED Date Received: 08/31/94

% Solids: 66.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7439-92-1	Lead	10.2			P

Color Before: BROWN Clarity Before: _____ Texture: MEDIUM

Color After: YELLOW Clarity After: _____ Artifacts: _____

Comments:

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1
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

SL-12

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 SDG No.: NETL18-1

Matrix (soil/water): SOIL Lab Sample ID: SL-12

Level (low/med): MED Date Received: 08/31/94

% Solids: 85.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7439-92-1	Lead	229			P

Color Before: BROWN Clarity Before: _____ Texture: MEDIUM

Color After: YELLOW Clarity After: _____ Artifacts: _____

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

SL-13

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 SDG No.: NETL18-1

Matrix (soil/water): SOIL Lab Sample ID: SL-13

Level (low/med): MED Date Received: 08/31/94

% Solids: 76.8

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7439-92-1	Lead	66.6			P

Color Before: BROWN Clarity Before: _____ Texture: MEDIUM

Color After: YELLOW Clarity After: _____ Artifacts: _____

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

SL-14

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 SDG No.: NETL18-1

Matrix (soil/water): SOIL Lab Sample ID: SL-14

Level (low/med): MED Date Received: 08/31/94

% Solids: 80.6

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7439-92-1	Lead	58.1			P

Color Before: BROWN Clarity Before: _____ Texture: MEDIUM

Color After: YELLOW Clarity After: _____ Artifacts: _____

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

SL-15

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 SDG No.: NETL18-1

Matrix (soil/water): SOIL Lab Sample ID: SL-15

Level (low/med): MED Date Received: 08/31/94

% Solids: 90.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7439-92-1	Lead	24.2			P

Color Before: BROWN Clarity Before: _____ Texture: MEDIUM

Color After: YELLOW Clarity After: _____ Artifacts: _____

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

SL-25

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 SDG No.: NETL18-1

Matrix (soil/water): SOIL Lab Sample ID: SL-25

Level (low/med): MED Date Received: 08/31/94

% Solids: 85.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7439-92-1	Lead	161			P

Color Before: BROWN Clarity Before: _____ Texture: MEDIUM

Color After: YELLOW Clarity After: _____ Artifacts: _____

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

FIELD BLANK

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 SDG No.: NETL18-1

Matrix (soil/water): WATER Lab Sample ID: FIELD BLANK

Level (low/med): LOW Date Received: 08/21/94

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	38.0	U		P
7440-36-0	Antimony	57.0	U		P
7440-38-2	Arsenic	2.0	U		F
7440-39-3	Barium	1.0	U		P
7440-41-7	Beryllium	1.0	U		P
7440-43-9	Cadmium	4.0	U		P
7440-70-2	Calcium	138.0	B		P
7440-47-3	Chromium	3.0	U		P
7440-48-4	Cobalt	6.0	U		P
7440-50-8	Copper	4.0	U		P
7439-89-6	Iron	15.0	B		P
7439-92-1	Lead	4.0			F
7439-95-4	Magnesium	10.0	B		P
7439-96-5	Manganese	1.0	U		P
7439-97-6	Mercury	0.2	U		CV
7440-02-0	Nickel	10.0	U		P
7440-09-7	Potassium	354.0	U		P
7782-49-2	Selenium	2.0	U		F
7440-22-4	Silver	4.0	U		P
7440-23-5	Sodium	697.0	B		P
7440-28-0	Thallium	1.0	U		F
7440-62-2	Vanadium	3.0	U		P
7440-66-6	Zinc	6.0	B		P
	Cyanide	2.0	U		C

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

0026

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

PBW

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 SDG No.: NETL18-1

Matrix (soil/water): WATER Lab Sample ID: PBW

Level (low/med): LOW Date Received: 08/21/94

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	38.0	U		P
7440-36-0	Antimony	57.0	U		P
7440-38-2	Arsenic	2.00	U		F
7440-39-3	Barium	1.00	U		P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	4.00	U		P
7440-70-2	Calcium	42.0	B		P
7440-47-3	Chromium	3.00	U		P
7440-48-4	Cobalt	6.00	U		P
7440-50-8	Copper	4.00	U		P
7439-89-6	Iron	6.00	B		P
7439-92-1	Lead	1.00	U		F
7439-95-4	Magnesium	8.00	B		P
7439-96-5	Manganese	1.00	U		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	10.0	U		P
7440-09-7	Potassium	354	U		P
7782-49-2	Selenium	2.00	U		F
7440-22-4	Silver	4.00	U		P
7440-23-5	Sodium	308	B		P
7440-28-0	Thallium	1.00	U		F
7440-62-2	Vanadium	3.00	U		P
7440-66-6	Zinc	4.00	B		P
	Cyanide	2.00	U		U

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

0027

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1
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.
PBS01

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 SDG No.: NETL18-1

Matrix (soil/water): SOIL Lab Sample ID: PBS01

Level (low/med): LOW Date Received: 08/31/94

% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5.21	U		P
7440-36-0	Antimony	7.81	U		P
7440-38-2	Arsenic	0.28	U		F
7440-39-3	Barium	0.14	U	E	P
7440-41-7	Beryllium	0.14	U		P
7440-43-9	Cadmium	0.55	U		P
7440-70-2	Calcium	5.48	B		P
7440-47-3	Chromium	0.41	U		P
7440-48-4	Cobalt	0.82	U		P
7440-50-8	Copper	0.55	U	*	P
7439-89-6	Iron	3.15	B		P
7439-92-1	Lead	0.14	U		F
7439-95-4	Magnesium	1.92	B		P
7439-96-5	Manganese	0.14	U		P
7439-97-6	Mercury	0.09	U		CV
7440-02-0	Nickel	1.37	U		P
7440-09-7	Potassium	48.5	U		P
7782-49-2	Selenium	0.28	U		F
7440-22-4	Silver	0.55	U		P
7440-23-5	Sodium	73.3	B		P
7440-28-0	Thallium	0.14	U		F
7440-62-2	Vanadium	0.41	U		P
7440-66-6	Zinc	0.55	U	*	P
	Cyanide				

Color Before: YELLOW Clarity Before: Texture: MEDIUM

Color After: COLORLESS Clarity After: Artifacts:

Comments:

0028

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

PBS01

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 SDG No.: NETL18-1

Matrix (soil/water): SOIL Lab Sample ID: PBS01

Level (low/med): MED Date Received: 08/31/94

% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7439-92-1	Lead	5.21	U		P

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

B: QC DATA

U.S. EPA - CLP
2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL18-1

Initial Calibration Source: LEEMAN

Continuing Calibration Source: SPEX

Concentration Units: ug/L

Analyte	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(1)	Found	%R(1)	M
Aluminum	20010.0	19620.00	98.1	10000.0	10340.00	103.4	10150.00	101.5	P
Antimony									
Arsenic									
Barium									
Beryllium									
Cadmium									
Calcium	500000.0	489500.00	97.9	250000.0	259000.00	103.6	269700.00	107.9	P
Chromium									
Cobalt									
Copper	2503.0	2297.00	91.8	1250.0	1298.00	103.8	1281.00	102.5	P
Iron	10020.0	9874.00	98.5	5000.0	4965.00	99.3	4764.00	95.3	P
Lead									
Magnesium	3000.0	2845.00	94.8	250000.0	247600.00	99.0	243500.00	97.4	P
Manganese	500000.0	475500.00	95.1	1500.0	1543.00	102.9	1493.00	99.5	P
Mercury									
Nickel									
Potassium	500000.0	484900.00	97.0	250000.0	249600.00	99.8	241200.00	96.5	P
Selenium									
Silver									
Sodium	500100.0	494500.00	98.9	250000.0	254100.00	101.6	248500.00	99.4	P
Thallium									
Vanadium									
Zinc									
Cyanide									

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP
2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL18-1

Initial Calibration Source: LEEMAN

Continuing Calibration Source: SPEX

Concentration Units: ug/L

Analyte	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(1)	Found	%R(1)	M
Aluminum				10000.0	10060.00	100.6			P
Antimony									
Arsenic									
Barium									
Beryllium									
Cadmium									
Calcium				250000.0	275300.00	110.1			P
Chromium									
Cobalt									
Copper				1250.0	1277.00	102.2			P
Iron				5000.0	4745.00	94.9			P
Lead									
Magnesium				250000.0	245300.00	98.1			P
Manganese				1500.0	1512.00	100.8			P
Mercury									
Nickel									
Potassium				250000.0	239400.00	95.8			P
Selenium									
Silver									
Sodium				250000.0	245500.00	98.2			P
Thallium									
Vanadium									
Zinc									
Cyanide									

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP
2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL18-1

Initial Calibration Source: SPEX

Continuing Calibration Source: JOHNSON & MATHEWS

Concentration Units: ug/L

Analyte	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(1)	Found	%R(1)	M
Aluminum									
Antimony	1000.0	1026.00	102.6	5000.0	5151.00	103.0	5309.00	106.2	P
Arsenic									
Barium									
Beryllium									
Cadmium									
Calcium									
Chromium									
Cobalt									
Copper									
Iron									
Lead									
Magnesium									
Manganese									
Mercury									
Nickel									
Potassium									
Selenium									
Silver									
Sodium									
Thallium									
Vanadium									
Zinc									
Cyanide									

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP
2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL18-1

Initial Calibration Source: SPEX

Continuing Calibration Source: JOHNSON & MATHEWS

Concentration Units: ug/L

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found	Continuing Calibration %R(1)	Continuing Calibration Found	Continuing Calibration %R(1)	M
Aluminum									
Antimony				5000.0	5190.00	103.8			P
Arsenic									
Barium									
Beryllium									
Cadmium									
Calcium									
Chromium									
Cobalt									
Copper									
Iron									
Lead									
Magnesium									
Manganese									
Mercury									
Nickel									
Potassium									
Selenium									
Silver									
Sodium									
Thallium									
Vanadium									
Zinc									
Cyanide									

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP
2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL18-1

Initial Calibration Source: LEEMAN

Continuing Calibration Source: SPEX

Concentration Units: ug/L

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found	Continuing Calibration %R(1)	Continuing Calibration Found	Continuing Calibration %R(1)	M
Aluminum									
Antimony									
Arsenic									
Barium	20010.0	19990.00	99.9	10000.0	10330.00	103.3	10570.00	105.7	P
Beryllium									
Cadmium									
Calcium									
Chromium									
Cobalt									
Copper									
Iron									
Lead									
Magnesium									
Manganese									
Mercury									
Nickel									
Potassium									
Selenium									
Silver									
Sodium									
Thallium									
Vanadium									
Zinc									
Cyanide									

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP
2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL18-1

Initial Calibration Source: LEEMAN

Continuing Calibration Source: SPEX

Concentration Units: ug/L

Analyte	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(1)	Found	%R(1)	M
Aluminum									
Antimony									
Arsenic									
Barium				10000.0	10620.00	106.2			P
Beryllium									
Cadmium									
Calcium									
Chromium									
Cobalt									
Copper									
Iron									
Lead									
Magnesium									
Manganese									
Mercury									
Nickel									
Potassium									
Selenium									
Silver									
Sodium									
Thallium									
Vanadium									
Zinc									
Cyanide									

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP
2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL18-1

Initial Calibration Source: LEEMAN

Continuing Calibration Source: SPEX

Concentration Units: ug/L

Analyte	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(1)	Found	%R(1)	M
Aluminum									
Antimony									
Arsenic									
Barium									
Beryllium	500.0	507.50	101.5	250.0	258.80	103.5	253.10	101.2	P
Cadmium	5010.0	4928.00	98.4	2500.0	2563.00	102.5	2522.00	100.9	P
Calcium									
Chromium	2046.0	1937.00	94.7	1000.0	1053.00	105.3	1053.00	105.3	P
Cobalt	5006.0	4870.00	97.3	2500.0	2685.00	107.4	2645.00	105.8	P
Copper									
Iron									
Lead									
Magnesium									
Manganese									
Mercury									
Nickel	8000.0	7763.00	97.0	4000.0	4198.00	105.0	4139.00	103.5	P
Potassium									
Selenium									
Silver									
Sodium									
Thallium									
Vanadium	5001.0	4813.00	96.2	2500.0	2643.00	105.7	2669.00	106.8	P
Zinc	3998.0	3734.00	93.4	2000.0	2039.00	102.0	2006.00	100.3	P
Cyanide									

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP
2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: SDG No.: NETL18-1

Initial Calibration Source: LEEMAN

Continuing Calibration Source: SPEX

Concentration Units: ug/L

Analyte	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(1)	Found	%R(1)	M
Aluminum									
Antimony									
Arsenic									
Barium									
Beryllium				250.0	258.70	103.5			P
Cadmium				2500.0	2568.00	102.7			P
Calcium									
Chromium				1000.0	1059.00	105.9			P
Cobalt				2500.0	2694.00	107.8			P
Copper									
Iron									
Lead									
Magnesium									
Manganese									
Mercury									
Nickel				4000.0	4217.00	105.4			P
Potassium									
Selenium									
Silver									
Sodium									
Thallium									
Vanadium				2500.0	2689.00	107.6			P
Zinc				2000.0	2062.00	103.1			P
Cyanide									

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP
2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: SDG No.: NETL18-1

Initial Calibration Source: LEEMAN

Continuing Calibration Source: SPEX

Concentration Units: ug/L

Analyte	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(1)	Found	%R(1)	M
Aluminum									
Antimony									
Arsenic									
Barium									
Beryllium									
Cadmium									
Calcium									
Chromium									
Cobalt									
Copper									
Iron									
Lead	5000.0	5000.00	100.0	2500.0	2648.00	105.9	2552.00	102.1	P
Magnesium									
Manganese									
Mercury									
Nickel									
Potassium									
Selenium									
Silver									
Sodium									
Thallium									
Vanadium									
Zinc									
Cyanide									

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP
2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: SDG No.: NETL18-1

Initial Calibration Source: LEEMAN

Continuing Calibration Source: SPEX

Concentration Units: ug/L

Analyte	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(1)	Found	%R(1)	M
Aluminum									
Antimony									
Arsenic									
Barium									
Beryllium									
Cadmium									
Calcium									
Chromium									
Cobalt									
Copper									
Iron									
Lead				2500.0	2533.00	101.3	2452.00	98.1	P
Magnesium									
Manganese									
Mercury									
Nickel									
Potassium									
Selenium									
Silver									
Sodium									
Thallium									
Vanadium									
Zinc									
Cyanide									

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP
2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: SDG No.: NETL18-1

Initial Calibration Source: LEEMAN

Continuing Calibration Source: SPEX

Concentration Units: ug/L

Analyte	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(1)	Found	%R(1)	M
Aluminum									
Antimony									
Arsenic									
Barium									
Beryllium									
Cadmium									
Calcium									
Chromium									
Cobalt									
Copper									
Iron									
Lead									
Magnesium									
Manganese									
Mercury									
Nickel									
Potassium									
Selenium									
Silver	2016.0	2007.00	99.6	1000.0	1057.00	105.7	1040.00	104.0	P
Sodium									
Thallium									
Vanadium									
Zinc									
Cyanide									

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP
2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL18-1

Initial Calibration Source: LEEMAN

Continuing Calibration Source: SPEX

Concentration Units: ug/L

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found	Continuing Calibration %R(1)	Continuing Calibration Found	Continuing Calibration %R(1)	M
Aluminum									
Antimony									
Arsenic									
Barium									
Beryllium									
Cadmium									
Calcium									
Chromium									
Cobalt									
Copper									
Iron									
Lead									
Magnesium									
Manganese									
Mercury									
Nickel									
Potassium									
Selenium									
Silver				1000.0	1037.00	103.7			P
Sodium									
Thallium									
Vanadium									
Zinc									
Cyanide									

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP
2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL18-1

Initial Calibration Source: LEAMAN

Continuing Calibration Source: SPEX

RUN DATE: 9/1/94

Concentration Units: ug/L

Analyte	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(1)	Found	%R(1)	M
Aluminum									
Antimony									
Arsenic	40.0	40.10	100.3	25.0	23.30	93.2			F
Barium									
Beryllium									
Cadmium									
Calcium									
Chromium									
Cobalt									
Copper									
Iron									
Lead									
Magnesium									
Manganese									
Mercury									
Nickel									
Potassium									
Selenium									
Silver									
Sodium									
Thallium									
Vanadium									
Zinc									
Cyanide									

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP
2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL18-1

Initial Calibration Source: LEEMAN

Continuing Calibration Source: SPEX

RUN DATE: 9/2/94

Concentration Units: ug/L

Analyte	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(1)	Found	%R(1)	M
Aluminum									
Antimony									
Arsenic	40.0	41.70	104.3	25.0	23.30	93.2	26.00	104.0	F
Barium									
Beryllium									
Cadmium									
Calcium									
Chromium									
Cobalt									
Copper									
Iron									
Lead									
Magnesium									
Manganese									
Mercury									
Nickel									
Potassium									
Selenium									
Silver									
Sodium									
Thallium									
Vanadium									
Zinc									
Cyanide									

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP
2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL18-1

Initial Calibration Source: SPEX

Continuing Calibration Source: JOHNSON & MATTHEWSS

Concentration Units: ug/L

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found	Continuing Calibration %R(1)	Continuing Calibration Found	Continuing Calibration %R(1)	M
Aluminum									
Antimony									
Arsenic									
Barium									
Beryllium									
Cadmium									
Calcium									
Chromium									
Cobalt									
Copper									
Iron									
Lead	40.0	40.50	101.3	50.0	48.90	97.8	52.00	104.0	F
Magnesium									
Manganese									
Mercury									
Nickel									
Potassium									
Selenium									
Silver									
Sodium									
Thallium									
Vanadium									
Zinc									
Cyanide									

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP
2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL18-1

Initial Calibration Source: SPEX

Continuing Calibration Source: JOHNSON & MATTHEWS

RUN DATE: 9/2/94

Concentration Units: ug/L

Analyte	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(1)	Found	%R(1)	M
Aluminum									
Antimony									
Arsenic									
Barium									
Beryllium									
Cadmium									
Calcium									
Chromium									
Cobalt									
Copper									
Iron									
Lead									
Magnesium									
Manganese									
Mercury									
Nickel									
Potassium									
Selenium	40.0	37.50	93.8	25.0	24.80	99.2	25.00	100.0	F
Silver									
Sodium									
Thallium									
Vanadium									
Zinc									
Cyanide									

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP
2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: SDG No.: NETL18-1

Initial Calibration Source: SPEX

Continuing Calibration Source: JOHNSON & MATTHEWS

RUN DATE: 9/6/94

Concentration Units: ug/L

Analyte	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(1)	Found	%R(1)	M
Aluminum									
Antimony									
Arsenic									
Barium									
Beryllium									
Cadmium									
Calcium									
Chromium									
Cobalt									
Copper									
Iron									
Lead									
Magnesium									
Manganese									
Mercury									
Nickel									
Potassium									
Selenium									
Silver									
Sodium									
Thallium	40.0	40.70	101.8	25.0	25.40	101.6	26.20	104.8	F
Vanadium									
Zinc									
Cyanide									

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP
2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: SDG No.: NETL18-1

Initial Calibration Source: ERA

Continuing Calibration Source: JOHNSON & MATHEWS

RUN DATE: 9/21/94

Concentration Units: ug/L

Analyte	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(1)	Found	%R(1)	M
Aluminum									
Antimony									
Arsenic									
Barium									
Beryllium									
Cadmium									
Calcium									
Chromium									
Cobalt									
Copper									
Iron									
Lead									
Magnesium									
Manganese									
Mercury	5.0	5.20	104.0	2.5	2.44	97.6			CV
Nickel									
Potassium									
Selenium									
Silver									
Sodium									
Thallium									
Vanadium									
Zinc									
Cyanide									

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP
2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL18-1

Initial Calibration Source: ERA

Continuing Calibration Source: JOHNSON & MATHEWS

RUN DATE: 9/16/94

Concentration Units: ug/L

Analyte	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(1)	Found	%R(1)	M
Aluminum									
Antimony									
Arsenic									
Barium									
Beryllium									
Cadmium									
Calcium									
Chromium									
Cobalt									
Copper									
Iron									
Lead									
Magnesium									
Manganese									
Mercury	5.0	5.03	100.6	5.0	4.75	95.0			CV
Nickel									
Potassium									
Selenium									
Silver									
Sodium									
Thallium									
Vanadium									
Zinc									
Cyanide									

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP
2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL18-1

Initial Calibration Source: FISHER

Continuing Calibration Source: BAKER

Concentration Units: ug/L

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found	Continuing Calibration %R(1)	Continuing Calibration Found	Continuing Calibration %R(1)	M
Aluminum									
Antimony									
Arsenic									
Barium									
Beryllium									
Cadmium									
Calcium									
Chromium									
Cobalt									
Copper									
Iron									
Lead									
Magnesium									
Manganese									
Mercury									
Nickel									
Potassium									
Selenium									
Silver									
Sodium									
Thallium									
Vanadium									
Zinc									
Cyanide	100.0	96.40	96.4	100.0	96.40	96.4			C

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP
2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL18-1

Initial Calibration Source: FISHER

Continuing Calibration Source: BAKER

Concentration Units: ug/L

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found	Continuing Calibration %R(1)	Continuing Calibration Found	Continuing Calibration %R(1)	M
Aluminum									
Antimony									
Arsenic									
Barium									
Beryllium									
Cadmium									
Calcium									
Chromium									
Cobalt									
Copper									
Iron									
Lead									
Magnesium									
Manganese									
Mercury									
Nickel									
Potassium									
Selenium									
Silver									
Sodium									
Thallium									
Vanadium									
Zinc									
Cyanide				50.0	49.80	99.6	49.80	99.6	C

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP
2B
CRDL STANDARD FOR AA AND ICP

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL18-1

AA CRDL Standard Source: _____

ICP CRDL Standard Source: JONHSON & MATHEWS

Concentration Units: ug/L

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
				Initial			Final	
	True	Found	%R	True	Found	%R	Found	%R
Aluminum				NR				
Antimony								
Arsenic								
Barium								
Beryllium								
Cadmium								
Calcium				NR				
Chromium								
Cobalt								
Copper				50.0	56.80	113.6	53.40	106.8
Iron				NR				
Lead								
Magnesium				NR				
Manganese				30.0	34.30	114.3	33.90	113.0
Mercury								
Nickel								
Potassium				NR				
Selenium								
Silver								
Sodium				NR				
Thallium								
Vanadium								
Zinc								

U.S. EPA - CLP
2B
CRDL STANDARD FOR AA AND ICP

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL18-1

AA CRDL Standard Source: _____

ICP CRDL Standard Source: SPEX

Concentration Units: ug/L

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
					Initial		Final	
	True	Found	%R	True	Found	%R	Found	%R
Aluminum								
Antimony				120.0	184.00	153.3	122.00	101.7
Arsenic								
Barium								
Beryllium								
Cadmium								
Calcium								
Chromium								
Cobalt								
Copper								
Iron								
Lead								
Magnesium								
Manganese								
Mercury								
Nickel								
Potassium								
Selenium								
Silver								
Sodium								
Thallium								
Vanadium								
Zinc								

U.S. EPA - CLP
2B
CRDL STANDARD FOR AA AND ICP

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL18-1

AA CRDL Standard Source: _____

ICP CRDL Standard Source: SPEX

Concentration Units: ug/L

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
				Initial			Final	
	True	Found	%R	True	Found	%R	Found	%R
Aluminum								
Antimony								
Arsenic								
Barium				NR			NR	
Beryllium								
Cadmium								
Calcium								
Chromium								
Cobalt								
Copper								
Iron								
Lead								
Magnesium								
Manganese								
Mercury								
Nickel								
Potassium								
Selenium								
Silver								
Sodium								
Thallium								
Vanadium								
Zinc								

U.S. EPA - CLP
2B
CRDL STANDARD FOR AA AND ICP

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: SDG No.: NETL18-1

AA CRDL Standard Source:

ICP CRDL Standard Source: SPEX

Concentration Units: ug/L

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
				Initial			Final	
	True	Found	%R	True	Found	%R	Found	%R
Aluminum								
Antimony								
Arsenic								
Barium								
Beryllium				10.0	10.90	109.0	10.80	108.0
Cadmium				10.0	12.80	128.0	11.40	114.0
Calcium								
Chromium				20.0	21.20	106.0	24.00	120.0
Cobalt				100.0	113.70	113.7	117.00	117.0
Copper								
Iron								
Lead								
Magnesium								
Manganese								
Mercury								
Nickel				80.0	89.30	111.6	84.80	106.0
Potassium								
Selenium								
Silver								
Sodium								
Thallium								
Vanadium				100.0	109.80	109.8	111.90	111.9
Zinc				40.0	44.00	110.0	46.60	116.5

U.S. EPA - CLP
2B
CRDL STANDARD FOR AA AND ICP

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL18-1

AA CRDL Standard Source: _____

ICP CRDL Standard Source: JONHSON & MATHEWS

Concentration Units: ug/L

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
				Initial			Final	
	True	Found	%R	True	Found	%R	Found	%R
Aluminum								
Antimony								
Arsenic								
Barium								
Beryllium								
Cadmium								
Calcium								
Chromium								
Cobalt								
Copper								
Iron								
Lead				80.0	75.50	94.4	82.40	103.0
Magnesium								
Manganese								
Mercury								
Nickel								
Potassium								
Selenium								
Silver								
Sodium								
Thallium								
Vanadium								
Zinc								

U.S. EPA - CLP
2B
CRDL STANDARD FOR AA AND ICP

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL18-1

AA CRDL Standard Source: _____

ICP CRDL Standard Source: SPEX

Concentration Units: ug/L

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
				Initial			Final	
	True	Found	%R	True	Found	%R	Found	%R
Aluminum								
Antimony								
Arsenic								
Barium								
Beryllium								
Cadmium								
Calcium								
Chromium								
Cobalt								
Copper								
Iron								
Lead								
Magnesium								
Manganese								
Mercury								
Nickel								
Potassium								
Selenium								
Silver				20.0	21.80	109.0	21.50	107.5
Sodium								
Thallium								
Vanadium								
Zinc								

U.S. EPA - CLP
2B
CRDL STANDARD FOR AA AND ICP

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL18-1

AA CRDL Standard Source: SPEX

ICP CRDL Standard Source: _____

RUN DATE: 9/1/94 Concentration Units: ug/L

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
				Initial			Final	
	True	Found	%R	True	Found	%R	Found	%R
Aluminum								
Antimony								
Arsenic	10.0	9.90	99.0					
Barium								
Beryllium								
Cadmium								
Calcium								
Chromium								
Cobalt								
Copper								
Iron								
Lead								
Magnesium								
Manganese								
Mercury								
Nickel								
Potassium								
Selenium								
Silver								
Sodium								
Thallium								
Vanadium								
Zinc								

U.S. EPA - CLP
2B
CRDL STANDARD FOR AA AND ICP

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL18-1

AA CRDL Standard Source: SPEX

ICP CRDL Standard Source: _____

RUN DATE: 9/2/94 Concentration Units: ug/L

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
				Initial			Final	
	True	Found	%R	True	Found	%R	Found	%R
Aluminum								
Antimony								
Arsenic	10.0	10.50	105.0					
Barium								
Beryllium								
Cadmium								
Calcium								
Chromium								
Cobalt								
Copper								
Iron								
Lead								
Magnesium								
Manganese								
Mercury								
Nickel								
Potassium								
Selenium								
Silver								
Sodium								
Thallium								
Vanadium								
Zinc								

U.S. EPA - CLP
2B
CRDL STANDARD FOR AA AND ICP

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL18-1

AA CRDL Standard Source: JOHNSON & MATTHEWS

ICP CRDL Standard Source: _____

Concentration Units: ug/L

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
				Initial			Final	
	True	Found	%R	True	Found	%R	Found	%R
Aluminum								
Antimony								
Arsenic								
Barium								
Beryllium								
Cadmium								
Calcium								
Chromium								
Cobalt								
Copper								
Iron								
Lead	3.0	2.60	86.7					
Magnesium								
Manganese								
Mercury								
Nickel								
Potassium								
Selenium								
Silver								
Sodium								
Thallium								
Vanadium								
Zinc								

U.S. EPA - CLP
2B
CRDL STANDARD FOR AA AND ICP

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL18-1

AA CRDL Standard Source: JOHNSON & MATTHEWS

ICP CRDL Standard Source: _____

RUN DATE: 9/2/94 Concentration Units: ug/L

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
				Initial			Final	
	True	Found	%R	True	Found	%R	Found	%R
Aluminum								
Antimony								
Arsenic								
Barium								
Beryllium								
Cadmium								
Calcium								
Chromium								
Cobalt								
Copper								
Iron								
Lead								
Magnesium								
Manganese								
Mercury								
Nickel								
Potassium								
Selenium	5.0	4.90	98.0					
Silver								
Sodium								
Thallium								
Vanadium								
Zinc								

U.S. EPA - CLP
2B
CRDL STANDARD FOR AA AND ICP

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL18-1

AA CRDL Standard Source: JOHNSON & MATTHEWS

ICP CRDL Standard Source: _____

RUN DATE: 9/6/94 Concentration Units: ug/L

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
				Initial			Final	
	True	Found	%R	True	Found	%R	Found	%R
Aluminum								
Antimony								
Arsenic								
Barium								
Beryllium								
Cadmium								
Calcium								
Chromium								
Cobalt								
Copper								
Iron								
Lead								
Magnesium								
Manganese								
Mercury								
Nickel								
Potassium								
Selenium								
Silver								
Sodium								
Thallium	10.0	10.00	100.0					
Vanadium								
Zinc								

U.S. EPA - CLP
2B
CRDL STANDARD FOR AA AND ICP

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL18-1

AA CRDL Standard Source: JOHNSOM & MATHEWS

ICP CRDL Standard Source: _____

RUN DATE: 9/21/94 Concentration Units: ug/L

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
				Initial			Final	
	True	Found	%R	True	Found	%R	Found	%R
Aluminum								
Antimony								
Arsenic								
Barium								
Beryllium								
Cadmium								
Calcium								
Chromium								
Cobalt								
Copper								
Iron								
Lead								
Magnesium								
Manganese								
Mercury	0.2	0.15	75.0					
Nickel								
Potassium								
Selenium								
Silver								
Sodium								
Thallium								
Vanadium								
Zinc								

U.S. EPA - CLP
2B
CRDL STANDARD FOR AA AND ICP

Lab Name: New England Testing Laboratory, Inc. Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL18-1

AA CRDL Standard Source: JOHNSOM & MATHEWS

ICP CRDL Standard Source: _____

RUN DATE: 9/16/94 Concentration Units: ug/L

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
				Initial			Final	
	True	Found	%R	True	Found	%R	Found	%R
Aluminum								
Antimony								
Arsenic								
Barium								
Beryllium								
Cadmium								
Calcium								
Chromium								
Cobalt								
Copper								
Iron								
Lead								
Magnesium								
Manganese								
Mercury	0.2	0.16	80.0					
Nickel								
Potassium								
Selenium								
Silver								
Sodium								
Thallium								
Vanadium								
Zinc								

U.S. EPA - CLP
3
BLANKS

Lab Name: New England Testing Laboratory Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: SDG No NETL-18-1

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): mg/kg

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum	38.0	U	38.0	U	38.0	U	38.0	U	5.209	U	P
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium	8.0	U	8.0	U	8.0	U	8.0	U	5.483	B	P
Chromium											
Cobalt											
Copper	8.8	B	4.0	U	4.0	U	4.0	U	0.548	U	P
Iron	3.0	U	3.0	U	3.0	U	3.5	B	3.153	B	P
Lead											
Magnesium	16.1	B	10.7	B	7.4	B	11.0	B	1.919	B	P
Manganese	1.0	U	1.0	U	1.0	U	1.0	U	0.137	U	P
Mercury											
Nickel											
Potassium	-431.8	B	354.0	U	-1021.0	B	-785.0	B	48.526	U	P
Selenium											
Silver											
Sodium	414.1	B	411.5	B	252.4	B	122.1	B	73.338	B	P
Thallium											
Vanadium											
Zinc											
Cyanide											

U.S. EPA - CLP
3
BLANKS

Lab Name: New England Testing Laboratory Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: SDG No NETL-18-1

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum									38.000	U	P
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium									42.000	B	P
Chromium											
Cobalt											
Copper									4.000	U	P
Iron									5.800	B	P
Lead											
Magnesium									7.500	B	P
Manganese									1.000	U	P
Mercury											
Nickel											
Potassium									-483.000	B	P
Selenium											
Silver											
Sodium									308.400	B	P
Thallium											
Vanadium											
Zinc											
Cyanide											

U.S. EPA - CLP
3
BLANKS

Lab Name: New England Testing Laboratory Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: SDG No NETL-18-1

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											
Antimony	57.0	U	57.0	U	57.0	U	57.0	U	7.814	U	P
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury											
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

U.S. EPA - CLP
3
BLANKS

Lab Name: New England Testing Laboratory Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: SDG No NETL-18-1

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											
Antimony									57.000	U	P
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury											
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

U.S. EPA - CLP
3
BLANKS

Lab Name: New England Testing Laboratory Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: SDG No NETL-18-1

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											
Antimony											
Arsenic											
Barium	1.0	U	1.0	U	1.0	U	1.0	U	0.137	U	P
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury											
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

U.S. EPA - CLP
3
BLANKS

Lab Name: New England Testing Laboratory Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: SDG No NETL-18-1

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											
Antimony											
Arsenic											
Barium									1.000	U	P
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury											
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

U.S. EPA - CLP
3
BLANKS

Lab Name: New England Testing Laboratory Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: SDG No NETL-18-1

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): mg/kg

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium	1.0	U	1.0	U	1.0	U	1.0	U	0.137	U	P
Cadmium	1.0	U	1.0	U	1.0	U	-1.6	B	0.137	U	P
Calcium											
Chromium	3.0	U	3.0	U	3.0	U	3.0	U	0.411	U	P
Cobalt	6.0	U	6.0	U	6.0	U	6.0	U	0.822	U	P
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury											
Nickel	10.0	U	10.0	U	10.0	U	-10.0	B	1.371	U	P
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium	3.0	U	3.0	U	3.0	U	3.0	U	0.411	U	P
Zinc	4.0	U	4.0	U	4.0	U	4.0	U	0.548	U	P
Cyanide											

U.S. EPA - CLP
3
BLANKS

Lab Name: New England Testing Laboratory Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: SDG No NETL-18-1

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium									1.000	U	P
Cadmium									-1.300	B	P
Calcium											
Chromium									3.000	U	P
Cobalt									6.000	U	P
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury											
Nickel									10.000	U	P
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium									3.000	U	P
Zinc									4.200	B	P
Cyanide											

U.S. EPA - CLP
3
BLANKS

Lab Name: New England Testing Laboratory Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: SDG No NETL-18-1

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead	38.0	U	38.0	U	38.0	U	38.0	U	5.209	U	P
Magnesium											
Manganese											
Mercury											
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

U.S. EPA - CLP
3
BLANKS

Lab Name: New England Testing Laboratory Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: SDG No NETL-18-1

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead			38.0	U							P
Magnesium											
Manganese											
Mercury											
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

U.S. EPA - CLP
3
BLANKS

Lab Name: New England Testing Laboratory Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: SDG No NETL-18-1

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury											
Nickel											
Potassium											
Selenium											
Silver	5.6	B	4.0	U	4.0	U	4.0	U	0.548	U	P
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

U.S. EPA - CLP
3
BLANKS

Lab Name: New England Testing Laboratory Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: SDG No NETL-18-1

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury											
Nickel											
Potassium											
Selenium											
Silver									4.000	U	P
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

U.S. EPA - CLP
3
BLANKS

Lab Name: New England Testing Laboratory Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL-18-1

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											
Antimony											
Arsenic	2.0	U	2.0	U					0.277	U	F
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury											
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

U.S. EPA - CLP
3
BLANKS

Lab Name: New England Testing Laboratory Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: SDG No.: NETL-18-1

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											
Antimony											
Arsenic									2.000	U	F
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury											
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

U.S. EPA - CLP
3
BLANKS

Lab Name: New England Testing Laboratory Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL-18-1

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

RUN DATE: 9/2/94

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											
Antimony											
Arsenic	2.0	U	2.0	U	2.0	U					F
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury											
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

U.S. EPA - CLP
3
BLANKS

Lab Name: New England Testing Laboratory Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: SDG No NETL-18-1

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead	-1.0	B	-1.1	B	-1.2	B			0.138	U	F
Magnesium											
Manganese											
Mercury											
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

U.S. EPA - CLP
3
BLANKS

Lab Name: New England Testing Laboratory Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: SDG No NETL-18-1

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead									1.000	U	F
Magnesium											
Manganese											
Mercury											
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

U.S. EPA - CLP
3
BLANKS

Lab Name: New England Testing Laboratory Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL-18-1

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

RUN DATE: 9/2/94

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury											
Nickel											
Potassium											
Selenium	2.0	U	2.0	U	2.0	U			0.277	U	F
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

U.S. EPA - CLP
3
BLANKS

Lab Name: New England Testing Laboratory Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL-18-1

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

RUN DATE: 9/2/94

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury											
Nickel											
Potassium											
Selenium									0.002	U	F
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

U.S. EPA - CLP
3
BLANKS

Lab Name: New England Testing Laboratory Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: SDG No.: NETL-18-1

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury											
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium	1.0	U	1.0	U	1.0	U			0.138	U	F
Vanadium											
Zinc											
Cyanide											

U.S. EPA - CLP
3
BLANKS

Lab Name: New England Testing Laboratory Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: SDG No NETL-18-1

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury											
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium									1.000	U	F
Vanadium											
Zinc											
Cyanide											

U.S. EPA - CLP
3
BLANKS

Lab Name: New England Testing Laboratory Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL-18-1

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

RUN DATE: 9/21/94

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury	0.2	U	0.2	U					0.085	U	CV
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

U.S. EPA - CLP
3
BLANKS

Lab Name: New England Testing Laboratory Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL-18-1

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

RUN DATE: 9/16/94

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury	0.2	U	0.2	U					0.200	U	CV
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

U.S. EPA - CLP
3
BLANKS

Lab Name: New England Testing Laboratory Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL-18-1

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

RUN DATE: 9/7/94

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury											
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	CV

U.S. EPA - CLP

4

ICP INTERFERENCE CHECK SAMPLE

Lab Name: New England Testing Laboratory Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: SDG No.: NETL-18-1

ICP ID Number: ICP-1 ICS Source: SPEX

Concentration Units: ug/L

Analyte	True Sol. A	True Sol. AB	Initial Found Sol. A	Initial Found Sol. AB	Initial Found %R	Final Found Sol. A	Final Found Sol. AB	Final Found %R
Aluminum	500000	500000	508500	509100.0	101.8	499500	499300.0	99.9
Antimony								
Arsenic								
Barium								
Beryllium								
Cadmium								
Calcium	500000	500000	514500	517100.0	103.4	546000	549000.0	109.8
Chromium								
Cobalt								
Copper	0	500	10	516.4	103.3	11	498.5	99.7
Iron	200000	200000	182000	183500.0	91.8	178700	181100.0	90.6
Lead								
Magnesium	500000	500000	499600	499300.0	99.9	489100	493100.0	98.6
Manganese	0	500	17	514.3	102.9	17	504.4	100.9
Mercury								
Nickel								
Potassium	0	0	-475	-365.7		-503	-543.0	
Selenium								
Silver								
Sodium	0	0	785	834.0		700	589.2	
Thallium								
Vanadium								
Zinc								

U.S. EPA - CLP
4
ICP INTERFERENCE CHECK SAMPLE

Lab Name: New England Testing Laboratory Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: SDG No.: NETL-18-1

ICP ID Number: ICP-1 ICS Source: SPEX

Concentration Units: ug/L

Analyte	True Sol. A	True Sol. AB	Initial Found Sol. A	Initial Found Sol. AB	Initial Found %R	Final Found Sol. A	Final Found Sol. AB	Final Found %R
Aluminum								
Antimony	0	0	-22	36.7		-40	-43.4	
Arsenic								
Barium								
Beryllium								
Cadmium								
Calcium								
Chromium								
Cobalt								
Copper								
Iron								
Lead								
Magnesium								
Manganese								
Mercury								
Nickel								
Potassium								
Selenium								
Silver								
Sodium								
Thallium								
Vanadium								
Zinc								

U.S. EPA - CLP

4

ICP INTERFERENCE CHECK SAMPLE

Lab Name: New England Testing Laboratory Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL-18-1

ICP ID Number: ICP-1 ICS Source: SPEX

Concentration Units: ug/L

Analyte	True Sol. A	True Sol. AB	Initial Found Sol. A	Initial Found Sol. AB	Initial Found %R	Final Found Sol. A	Final Found Sol. AB	Final Found %R
Aluminum								
Antimony								
Arsenic								
Barium	0	500	24	527.2	105.4	24	555.3	111.1
Beryllium								
Cadmium								
Calcium								
Chromium								
Cobalt								
Copper								
Iron								
Lead								
Magnesium								
Manganese								
Mercury								
Nickel								
Potassium								
Selenium								
Silver								
Sodium								
Thallium								
Vanadium								
Zinc								

U.S. EPA - CLP
4
ICP INTERFERENCE CHECK SAMPLE

Lab Name: New England Testing Laboratory Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: SDG No.: NETL-18-1

ICP ID Number: ICP-1 ICS Source: SPEX

Concentration Units: ug/L

Analyte	True Sol. A	True Sol. AB	Initial Found Sol. A	Initial Found Sol. AB	Initial Found %R	Final Found Sol. A	Final Found Sol. AB	Final Found %R
Aluminum								
Antimony								
Arsenic								
Barium								
Beryllium	0	500	0	520.0	104.0	0	515.7	103.1
Cadmium	0	1000	15	1036.0	103.6	12	1035.0	103.5
Calcium								
Chromium	0	500	12	518.0	103.6	12	522.1	104.4
Cobalt	0	500	15	524.7	104.9	12	524.3	104.9
Copper								
Iron								
Lead								
Magnesium								
Manganese								
Mercury								
Nickel	0	1000	1	1001.0	100.1	-8	1010.0	101.0
Potassium								
Selenium								
Silver								
Sodium								
Thallium								
Vanadium	0	500	0	507.5	101.5	-1	516.1	103.2
Zinc	0	1000	56	1050.0	105.0	61	1067.0	106.7

U.S. EPA - CLP
4
ICP INTERFERENCE CHECK SAMPLE

Lab Name: New England Testing Laboratory Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: SDG No.: NETL-18-1

ICP ID Number: ICP-1 ICS Source: SPEX

DATE: 9/1/94

Concentration Units: ug/L

Analyte	True Sol. A	True Sol. AB	Initial Found Sol. A	Initial Found Sol. AB	Initial Found %R	Final Found Sol. A	Final Found Sol. AB	Final Found %R
Aluminum								
Antimony								
Arsenic								
Barium								
Beryllium								
Cadmium								
Calcium								
Chromium								
Cobalt								
Copper								
Iron								
Lead	0	1000	-91	930.7	93.1	-55	888.2	88.8
Magnesium								
Manganese								
Mercury								
Nickel								
Potassium								
Selenium								
Silver								
Sodium								
Thallium								
Vanadium								
Zinc								

U.S. EPA - CLP

4

ICP INTERFERENCE CHECK SAMPLE

Lab Name: New England Testing Laboratory Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL-18-1

ICP ID Number: ICP-1 ICS Source: SPEX

Concentration Units: ug/L

Analyte	True Sol. A	True Sol. AB	Initial Found Sol. A	Initial Found Sol. AB	Initial Found %R	Final Found Sol. A	Final Found Sol. AB	Final Found %R
Aluminum								
Antimony								
Arsenic								
Barium								
Beryllium								
Cadmium								
Calcium								
Chromium								
Cobalt								
Copper								
Iron								
Lead								
Magnesium								
Manganese								
Mercury								
Nickel								
Potassium								
Selenium								
Silver	0	1000	0	924.6	92.5	0	920.6	92.1
Sodium								
Thallium								
Vanadium								
Zinc								

U.S. EPA - CLP
5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

SL-08MS

Lab Name: New England Testing Laboratory Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: SDG No.: NETL-18-1

Matrix (soil/water): SOIL Level (low/med): LOW

% Solids for Sample: 73.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum									NR
Antimony	75-125	110.9882		0.0000	U	141.10	78.7		P
Arsenic	75-125	19.6101		10.9748		9.33	92.5		F
Barium	75-125	651.1813		20.6475	B	561.35	112.3		P
Beryllium	75-125	16.2606		0.1860	B	13.86	116.0		P
Cadmium	75-125	16.4497		0.0000	U	14.08	116.8		P
Calcium									NR
Chromium	75-125	81.4922		11.3468		56.08	125.1		P
Cobalt	75-125	164.8752		1.1161	B	139.93	117.0		P
Copper	75-125	88.1099		15.0671		70.86	103.1		P
Iron									NR
Lead	75-125	209.4973		51.2653		139.98	113.0		P
Magnesium									NR
Manganese	75-125	204.5813		42.7831		139.45	116.0		P
Mercury	75-125	1.8933		0.4029		1.61	92.6		CV
Nickel	75-125	167.9004		0.0000	U	139.70	120.2		P
Potassium									NR
Selenium	75-125	5.7220		0.9301		4.67	102.7		F
Silver	75-125	13.6135		0.0000	U	13.86	98.2		P
Sodium									NR
Thallium	75-125	9.9471		0.0000	U	9.33	106.6		F
Vanadium	75-125	185.6736		18.2293		140.07	119.5		P
Zinc	75-125	184.1610		32.9244		139.48	108.4		P
Cyanide	75-125	36.4000		0.0000	U	35.74	101.8		C

Comments:

0095

U.S. EPA - CLP
5B
POST DIGEST SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

SL-08

Lab Name: NEW ENGLAND TESTING LABORATORY Contract: G&H RIFS

Lab Code: RI 010 Case No.: E0831-02 SAS No.: SDG No. NETL-18-

Matrix (soil/water): SOIL Level (low/med): LOW

Concentration Units: ug/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum									
Antimony									
Arsenic									
Barium									
Beryllium									
Cadmium									
Calcium									
Chromium									
Cobalt									
Copper									
Iron									
Lead									
Magnesium									
Manganese									
Mercury									
Nickel									
Potassium									
Selenium									
Silver									
Sodium									
Thallium									
Vanadium									
Zinc									
Cyanide									

Comments:

U.S. EPA - CLP
6
DUPLICATES

EPA SAMPLE NO.

SL-08MSD

Lab Name: NEW ENGLAND TESTING LABORATORY Contract: G&H RD/RA

Lab Code: RI 010 Case No.: E0831-02 SAS No.: SDG No. NETL-18-1

Matrix (soil/water): SOIL Level (low/med): LOW

% Solids for Sample: 74.1 % Solids for Duplicate: 76.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum		5712.4734		6470.4838		12.4		P
Antimony		10.6028	U	10.2222	U			P
Arsenic		10.9748		10.1816		7.5		F
Barium		20.6475	B	21.3411	B	3.3		P
Beryllium		0.1860	B	0.1793	B	3.7		P
Cadmium		0.7441	U	0.7173	U			P
Calcium		480.2868	B	319.9374	B	40.1		P
Chromium		11.3468		11.2982		0.4		P
Cobalt		1.1161	B	1.2554	B	11.7		P
Copper		15.0671		11.6569		25.5	*	P
Iron		5429.7329		5448.2621		0.3		P
Lead		51.2653		41.7856		20.4		F
Magnesium		419.0883	B	431.6645	B	3.0		P
Manganese		42.7831		40.8889		4.5		P
Mercury	0.1	0.4029		0.3493		14.3		CV
Nickel		1.8601	U	3.5867	B	63.4		P
Potassium		65.8488	U	63.4853	U			P
Selenium	0.9	0.9301		0.9551	B	2.7		F
Silver		0.7441	U	0.7173	U			P
Sodium		113.8402	B	91.6413	B	21.6		P
Thallium		0.1860	U	0.1802	U			F
Vanadium	9.3	18.2293		18.1131		0.6		P
Zinc		32.9244		26.5419		21.5	*	P
Cyanide		0.3000	U	0.3000	U			C

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7

LABORATORY CONTROL SAMPLE

Lab Name: NEW ENGLAND TESTING LABORATORY Contract: G&H RD/RA

Lab Code: RI 010 Case No.: E0831-02 SAS No.: SDG No.: NETL-18-1

LCS Source: LEEMAN/SPEX

Aqueous LCS Source: HG JOHNSON & MATHEWS

Aqueous LCS Source: CN FISHER

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/kg) True	Found	C	Limits		%R
Aluminum				1381.9	1300.4		80.0	120.0	94.1
Antimony				68.8	69.2				100.6
Arsenic				2.8	2.8		80.0	120.0	101.0
Barium				1381.9	1319.1		80.0	120.0	95.5
Beryllium				34.5	33.5		80.0	120.0	97.0
Cadmium				345.3	324.2		80.0	120.0	93.9
Calcium				35773.5	33998.6		80.0	120.0	95.0
Chromium				141.3	128.6		80.0	120.0	91.0
Cobalt				345.7	319.6		80.0	120.0	92.4
Copper				172.9	153.1		80.0	120.0	88.6
Iron				692.0	614.0		80.0	120.0	88.7
Lead				2.8	2.8		80.0	120.0	102.0
Magnesium				34675.4	31160.2		80.0	120.0	89.9
Manganese				207.2	188.5		80.0	120.0	91.0
Mercury				0.3	0.4		80.0	120.0	102.0
Nickel				552.5	517.1		80.0	120.0	93.6
Potassium				34530.4	31788.7		80.0	120.0	92.1
Selenium				2.7	2.7		80.0	120.0	99.5
Silver				139.2	69.5				50.0
Sodium				34530.4	32272.1		80.0	120.0	93.5
Thallium				2.8	2.8		80.0	120.0	102.5
Vanadium				345.3	320.8		80.0	120.0	92.9
Zinc				276.1	243.1		80.0	120.0	88.0
Cyanide	100.0	96.40	96.4						

U.S. EPA - CLP
7
LABORATORY CONTROL SAMPLE

Lab Name: NEW ENGLAND TESTING LABORATORY Contract: G&H RD/RA

Lab Code: RI 010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL-18-1

LCS Source: LEEMAN/SPEX

Aqueous LCS Source: HG _____

Aqueous LCS Source: CN _____

FOR LEAD BY ICP

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/kg) True	Found	C	Limits		%R
Aluminum									
Antimony									
Arsenic									
Barium									
Beryllium									
Cadmium									
Calcium									
Chromium									
Cobalt									
Copper									
Iron									
Lead				345.3	313.8		276.2	414.4	90.9
Magnesium									
Manganese									
Mercury									
Nickel									
Potassium									
Selenium									
Silver									
Sodium									
Thallium									
Vanadium									
Zinc									
Cyanide									

U.S. EPA - CLP
8
STANDARD ADDITION RESULTS

Lab Name: NEW ENGLAND TESTING LABORATORY Contract: G&H RD/RA

Lab Code: RI 010 Case No.: E0831-02 SAS No.: ______ SDG No.: NETL-18-1

Concentration Units: ug/L

EPA Sample No.	An	0 ADD ABS	1 ADD CON	1 ADD ABS	2 ADD CON	2 ADD ABS	3 ADD CON	3 ADD ABS	Final Conc.	r	Q

FORM VIII - IN ILM02.0

U.S. EPA - CLP
9
ICP SERIAL DILUTION

EPA SAMPLE NO.

SL-08

Lab Name: NEW ENGLAND TESTING LABORATORY Contract: G&HRD/RA

Lab Code: RI 010 Case No.: E0831-02 SAS No.: SDG No.: NETL-18-

Matrix (soil/water): SOIL Level (low/med): LOW

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Differ-ence	Q	M
Aluminum	30710.00		32230.00		4.9		P
Antimony	57.00	U	0.00	U			P
Arsenic							NR
Barium	110.90	B	127.50		15.0	E	P
Beryllium	1.10	B	0.00	U			P
Cadmium	1.90	B	5.50	B	189.5		P
Calcium	2582.00		2737.50		6.0		P
Chromium	61.20		76.50		25.0		P
Cobalt	6.30	B	0.00	U	100		P
Copper	80.60		86.00		6.7		P
Iron	29190.00		30990.00		6.2		P
Lead							P
Magnesium	2253.00		2409.00		6.9		P
Manganese	230.00		242.50		5.4		P
Mercury							NR
Nickel	10.00	U	0.00	U			P
Potassium	354.00	U	0.00	U			P
Selenium							NR
Silver	4.00	U	0.00	U			P
Sodium	612.30	B	1862.00	B	204.1		P
Thallium							NR
Vanadium	97.90		101.00		3.2		P
Zinc	177.40		201.00		13.3		P

U.S. EPA - CLP
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ICP SERIAL DILUTION

EPA SAMPLE NO.

SL-12

Lab Name: NEW ENGLAND TESTING LABORATORY Contract: G&HRD/RA

Lab Code: RI 010 Case No.: E0831-02 SAS No.: SDG No.: NETL-18-1

Matrix (soil/water): SOIL Level (low/med): LOW

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Differ-ence	Q	M
Aluminum							P
Antimony							P
Arsenic							NR
Barium							P
Beryllium							P
Cadmium							P
Calcium							P
Chromium							P
Cobalt							P
Copper							P
Iron							P
Lead	1420.00		1395.00		1.8		P
Magnesium							P
Manganese							P
Mercury							NR
Nickel							P
Potassium							P
Selenium							NR
Silver							P
Sodium							P
Thallium							NR
Vanadium							P
Zinc							P

U.S. EPA - CLP
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PREPARATION LOG

Lab Name: NEW ENGLAND TESTING LABORATORY Contract: G&H RD/RA

Lab Code: RI 010 Case No.: E0831-02 SAS No.: SDG No.: NETL-18-1

Method: P

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
SL-01	08/31/94	1.45	200
SL-03	08/31/94	1.45	200
SL-04	08/31/94	1.45	200
SL-05	08/31/94	1.46	200
SL-6/7	08/31/94	1.45	200
SL-08	08/31/94	1.45	200
SL-08MS	08/31/94	1.45	200
SL-08MSD	08/31/94	1.46	200
SL-10/11	08/31/94	1.45	200
SL-12	08/31/94	1.45	200
SL-13	08/31/94	1.45	200
SL-14	08/31/94	1.45	200
SL-15	08/31/94	1.45	200
SL-25	08/31/94	1.45	200
LCSS	08/31/94	1.45	200
LCSS-SB	08/31/94	1.45	200
FIELD BLANK	08/31/94		100
PBS	08/31/94	1.46	200
PBW	08/31/94		100

FORM XIII - IN ILM02.0

U.S. EPA - CLP
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PREPARATION LOG

Lab Name: NEW ENGLAND TESTING LABORATORY Contract: G&H RD/RA

Lab Code: RI 010 Case No.: E0831-02 SAS No.: SDG No.: NETL-18-1

Method: F

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
SL-04	08/31/94	1.46	200
SL-6/7	08/31/94	1.45	200
SL-08	08/31/94	1.45	200
SL-08MS	08/31/94	1.45	200
SL-08MSD	08/31/94	1.46	200
LCSS	08/31/94	1.46	200
LCSS-AS	08/31/94	1.45	200
FIELD BLANK	08/31/94		100
PBS	08/31/94	1.45	200
PBW	08/31/94		100

U.S. EPA - CLP
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PREPARATION LOG

Lab Name: NEW ENGLAND TESTING LABORATORY Contract: G&H RD/RA

Lab Code: RI 010 Case No.: E0831-02 SAS No.: SDG No.: NETL-18-1

Method: CV

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
FIELD BLANK	09/16/94		100
PBW	09/16/94		100

FORM XIII - IN ILM02.0

U.S. EPA - CLP
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PREPARATION LOG

Lab Name: NEW ENGLAND TESTING LABORATORY Contract: G&H RD/RA

Lab Code: RI 010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL-18-1

Method: CV

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
SL-04	09/21/94	0.226	100
SL-6/7	09/21/94	0.222	100
SL-08	09/21/94	0.211	100
SL-08MS	09/21/94	0.212	100
SL-08MSD	09/21/94	0.209	100
LCSS	09/21/94	0.222	100
PBS	09/21/94	0.234	100

U.S. EPA - CLP
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PREPARATION LOG

Lab Name: NEW ENGLAND TESTING LABORATORY Contract: G&H RD/RA

Lab Code: RI 010 Case No.: E0831-02 SAS No.: SDG No.: NETL-18-1

Method: C

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
SL-04	09/07/94	5.029	100
SL-6/7	09/07/94	4.894	100
SL-08	09/07/94	5.019	100
SL-08MS	09/07/94	4.791	100
SL-08MSD	09/07/94	5.042	100
FIELD BLK	09/07/94		100
PBW	09/07/94		100

U.S. EPA - CLP
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ANALYSIS RUN LOG

Lab Name: NEW ENGLAND TESTING LABORATORY Contract: G & H RD/RA

Lab Code: RI 010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL-18-1

Instrument ID Number: ICP-1 Method: P

Start Date: 09/06/94 End Date: 09/06/94

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
S0	1.00	1038		X						X			X	X		X	X			X			X					
S0	1.00	1041		X						X			X	X		X	X			X			X					
S0	1.00	1043		X						X			X	X		X	X			X			X					
S	1.00	1047		X						X			X	X		X	X			X			X					
S	1.00	1049		X						X			X	X		X	X			X			X					
S	1.00	1051		X						X			X	X		X	X			X			X					
ICV	1.00	1102		X						X			X	X		X	X			X			X					
ICB	1.00	1112		X						X			X	X		X	X			X			X					
CCV	1.00	1134		X						X			X	X		X	X			X			X					
CCB	1.00	1142		X						X			X	X		X	X			X			X					
ICSA	1.00	1146		X						X			X	X		X	X			X			X					
ICSAB	1.00	1152		X						X			X	X		X	X			X			X					
CRI	1.00	1202		X						X			X	X		X	X			X			X					
PBS	1.00	1211		X						X			X	X		X	X			X			X					
LCSS	1.00	1217		X						X			X	X		X	X			X			X					
SL-04	1.00	1224		X						X			X	X		X	X			X			X					
SL-6/7	1.00	1230		X						X			X	X		X	X			X			X					
SL-08	1.00	1238		X						X			X	X		X	X			X			X					
SL-08L	5.00	1247		X						X			X	X		X	X			X			X					
CCV	1.00	1257		X						X			X	X		X	X			X			X					
CCB	1.00	1303		X						X			X	X		X	X			X			X					
SL-08MS	1.00	1309		X						X			X	X		X	X			X			X					
SL-08MSD	1.00	1317		X						X			X	X		X	X			X			X					
PBW	1.00	1324		X						X			X	X		X	X			X			X					
FIELD BLANK	1.00	1329		X						X			X	X		X	X			X			X					
ICSA	1.00	1334		X						X			X	X		X	X			X			X					
ICSAB	1.00	1339		X						X			X	X		X	X			X			X					
CRI	1.00	1343		X						X			X	X		X	X			X			X					
CCV	1.00	1349		X						X			X	X		X	X			X			X					
CCB	1.00	1355		X						X			X	X		X	X			X			X					

FORM XIV - IN ILM02.0

U.S. EPA - CLP
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ANALYSIS RUN LOG

Lab Name: NEW ENGLAND TESTING LABORATORY Contract: G & H RD/RA

Lab Code: RI 010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL-18-1

Instrument ID Number: ICP-1 Method: P

Start Date: 09/07/94 End Date: 09/07/94

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	KI	SE	AG	NA	TL	V	ZN	CN
S0	1.00	1820			X																							
S0	1.00	1821			X																							
S0	1.00	1821			X																							
S10	1.00	1823			X																							
S10	1.00	1823			X																							
S10	1.00	1824			X																							
ICV	1.00	1827			X																							
ICB	1.00	1830			X																							
CCV	1.00	1833			X																							
CCB	1.00	1835			X																							
ICSA	1.00	1837			X																							
ICSAB	1.00	1839			X																							
CRI	1.00	1851			X																							
PBS	1.00	1853			X																							
LCSS	1.00	1857			X																							
SL-04	1.00	1901			X																							
SL-6/7	1.00	1904			X																							
SL-08	1.00	1908			X																							
SL-08L	5.00	1910			X																							
CCV	1.00	1913			X																							
CCB	1.00	1917			X																							
SL-08MS	1.00	1919			X																							
SL-08MSD	1.00	1924			X																							
PBW	1.00	1926			X																							
FIELD BLANK	1.00	1930			X																							
ICSA	1.00	1933			X																							
ICSAB	1.00	1936			X																							
CRI	1.00	1939			X																							
CCV	1.00	1942			X																							
CCB	1.00	1945			X																							

U.S. EPA - CLP
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ANALYSIS RUN LOG

Lab Name: NEW ENGLAND TESTING LABORATORY Contract: G & H RD/RA

Lab Code: RI 010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL-18-1

Instrument ID Number: ICP-1 Method: P

Start Date: 09/09/94 End Date: 09/09/94

EPA Sample No.	D/F	Time	% R	Analytes																										
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN			
S0	1.00	0017					X																							
S0	1.00	1704					X																							
S0	1.00	1704					X																							
S20	1.00	1705					X																							
S20	1.00	1706					X																							
S20	1.00	1706					X																							
ICV	1.00	1711					X																							
ICB	1.00	1716					X																							
CCV	1.00	1718					X																							
CCB	1.00	1721					X																							
ICSA	1.00	1723					X																							
ICSAB	1.00	1725					X																							
PBS	1.00	1728					X																							
LCSS	1.00	1732					X																							
SL-04	1.00	1737					X																							
SL-6/7	1.00	1740					X																							
SL-08	1.00	1743					X																							
SL-08L	5.00	1745					X																							
CCV	1.00	1747					X																							
CCB	1.00	1750					X																							
SL-08MS	1.00	1756					X																							
SL-08MSD	1.00	1759					X																							
PBW	1.00	1802					X																							
FIELD BLANK	1.00	1805					X																							
ICSA	1.00	1806					X																							
ICSAB	1.00	1808					X																							
CCV	1.00	1810					X																							
CCB	1.00	1813					X																							

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U.S. EPA - CLP
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ANALYSIS RUN LOG

Lab Name: NEW ENGLAND TESTING LABORATORY Contract: G & H RD/RA

Lab Code: RI 010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL-18-1

Instrument ID Number: ICP-1 Method: P

Start Date: 09/09/94 End Date: 09/09/94

EPA Sample No.	D/F	Time	% R	Analytes																										
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN			
S0	1.00	1408						X	X		X	X							X						X	X				
S0	1.00	1410						X	X		X	X							X						X	X				
S0	1.00	1412						X	X		X	X							X						X	X				
S	1.00	1416						X	X		X	X							X						X	X				
S	1.00	1419						X	X		X	X							X						X	X				
S	1.00	1421						X	X		X	X							X						X	X				
ICV	1.00	1432						X	X		X	X							X						X	X				
ICB	1.00	1439						X	X		X	X							X						X	X				
CCV	1.00	1444						X	X		X	X							X						X	X				
CCB	1.00	1454						X	X		X	X							X						X	X				
ICSA	1.00	1458						X	X		X	X							X						X	X				
ICSAB	1.00	1505						X	X		X	X							X						X	X				
CRI	1.00	1514						X	X		X	X							X						X	X				
PBS	1.00	1521						X	X		X	X							X						X	X				
LCSS	1.00	1525						X	X		X	X							X						X	X				
SL-04	1.00	1535						X	X		X	X							X						X	X				
SL-6/7	1.00	1544						X	X		X	X							X						X	X				
SL-08	1.00	1550						X	X		X	X							X						X	X				
SL-08L	5.00	1555						X	X		X	X							X						X	X				
CCV	1.00	1600						X	X		X	X							X						X	X				
CCB	1.00	1605						X	X		X	X							X						X	X				
SL-08MS	1.00	1611						X	X		X	X							X						X	X				
SL-08MSD	1.00	1619						X	X		X	X							X						X	X				
PBW	1.00	1625						X	X		X	X							X						X	X				
FIELD BLANK	1.00	1630						X	X		X	X							X						X	X				
ICSA	1.00	1633						X	X		X	X							X						X	X				
ICSAB	1.00	1638						X	X		X	X							X						X	X				
CRI	1.00	1642						X	X		X	X							X						X	X				
CCV	1.00	1647						X	X		X	X							X						X	X				
CCB	1.00	1653						X	X		X	X							X						X	X				

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ANALYSIS RUN LOG

Lab Name: NEW ENGLAND TESTING LABORATORY Contract: G & H RD/RA

Lab Code: RI 010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL-18-1

Instrument ID Number: ICP-1 Method: P

Start Date: 09/01/94 End Date: 09/01/94

EPA Sample No.	D/F	Time	% R	Analytes
				ALSBSASABEBCDCACRCOCUFEPBMGMNHGINKSEAGNATLVZNCN
S0	1.00	1115		X
S0	1.00	1116		X
S0	1.00	1116		X
S5	1.00	1127		X
S5	1.00	1127		X
S5	1.00	1128		X
ICV	1.00	1132		X
ICB	1.00	1136		X
CCV	1.00	1138		X
CCB	1.00	1141		X
ICSA	1.00	1144		X
ICSAB	1.00	1147		X
CRI	1.00	1151		X
LCSS	1.00	1154		X
PBW	1.00	1157		X
FIELD BLANK	1.00	1201		X
PBS	1.00	1204		X
SL-01	1.00	1207		X
SL-03	1.00	1210		X
CCV	1.00	1213		X
CCB	1.00	1216		X
SL-04	1.00	1220		X
SL-05	1.00	1228		X
SL-6/7	1.00	1233		X
SL-08	1.00	1238		X
SL-08MS	1.00	1242		X
SL-08MSD	1.00	1249		X
SL-10/11	1.00	1252		X
SL-12	1.00	1255		X
SL-13	1.00	1258		X
CCV	1.00	1302		X
CCB	1.00	1305		X
SL-14	1.00	1308		X

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ANALYSIS RUN LOG

Lab Name: NEW ENGLAND TESTING LABORATORY Contract: G & H RD/RA

Lab Code: RI 010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL-18-1

Instrument ID Number: ICP-1 Method: P

Start Date: 09/01/94 End Date: 09/01/94

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
SL-15	1.00	1312													X											
SL-25	1.00	1315													X											
SL-25L	5.00	1320													X											
SL-12L	5.00	1327													X											
ICSA	1.00	1331													X											
ICSAB	1.00	1334													X											
CRI	1.00	1338													X											
CCV	1.00	1340													X											
CCB	1.00	1344													X											

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ANALYSIS RUN LOG

Lab Name: NEW ENGLAND TESTING LABORATORY Contract: G & H RD/RA

Lab Code: RI 010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL-18-1

Instrument ID Number: ICP-1 Method: P

Start Date: 09/09/94 End Date: 09/09/94

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
S0	1.00	1127																			X					
S0	1.00	1127																			X					
S0	1.00	1128																			X					
S2	1.00	1129																			X					
S2	1.00	1129																			X					
S2	1.00	1130																			X					
ICV	1.00	1134																			X					
ICB	1.00	1137																			X					
CCV	1.00	1139																			X					
CCB	1.00	1142																			X					
ICSA	1.00	1145																			X					
ICSAB	1.00	1148																			X					
CRI	1.00	1154																			X					
PBS	1.00	1157																			X					
LCSS	1.00	1200																			X					
SL-04	1.00	1203																			X					
SL-6/7	1.00	1206																			X					
SL-08	1.00	1210																			X					
SL-08L	5.00	1213																			X					
CCV	1.00	1216																			X					
CCB	1.00	1219																			X					
SL-08MS	1.00	1221																			X					
SL-08MSD	1.00	1224																			X					
PBW	1.00	1226																			X					
FIELD BLANK	1.00	1228																			X					
ICSA	1.00	1231																			X					
ICSAB	1.00	1234																			X					
CRI	1.00	1236																			X					
CCV	1.00	1239																			X					
CCB	1.00	1242																			X					

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U.S. EPA - CLP
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ANALYSIS RUN LOG

Lab Name: NEW ENGLAND TESTING LABORATORY Contract: G & H RD/RA

Lab Code: RI 010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL-18-1

Instrument ID Number: FURNACE-1 Method: F

Start Date: 09/01/94 End Date: 09/01/94

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	KE	SE	AG	NA	TL	V	ZN	CN
S0	1.00	1323				X																						
S10	1.00	1329				X																						
S25	1.00	1334				X																						
S50	1.00	1340				X																						
ICV	1.00	1348				X																						
ICB	1.00	1353				X																						
CRA	1.00	1359				X																						
PBS	1.00	1405				X																						
PBSA	1.00	1410	103.0			X																						
PBW	1.00	1416				X																						
PBWA	1.00	1422	96.5			X																						
LCS	2.00	1427				X																						
LCSA	2.00	1433	92.5			X																						
FIELD BLANK	1.00	1439				X																						
FIELD BLKA	1.00	1445	99.0			X																						
CCV	1.00	1451				X																						
CCB	1.00	1457				X																						

U.S. EPA - CLP
14
ANALYSIS RUN LOG

Lab Name: NEW ENGLAND TESTING LABORATORY Contract: G & H RD/RA

Lab Code: RI 010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL-18-1

Instrument ID Number: FURNACE-1 Method: F

Start Date: 09/02/94 End Date: 09/02/94

EPA Sample No.	D/F	Time	% R	Analytes
				ALL SB SAS ABA BE CD CAR CO CU FE PB MG MN HG NI K SE AG NA TL V ZN CN
S0	1.00	0947		X
S10	1.00	0952		X
S25	1.00	0958		X
S50	1.00	1003		X
ICV	1.00	1022		X
ICB	1.00	1027		X
CRA	1.00	1033		X
SL-04	1.00	1039		X
SL-04A	1.00	1044	114.0	X
SL-6/7	1.00	1050		X
SL-6/7A	1.00	1056	113.6	X
SL-08	1.00	1102		X
SL-08L	2.00	1107		X
SL08LA	2.00	1113	113.5	X
SL-08MS	1.00	1119		X
SL-08MSL	5.00	1125		X
CCV	1.00	1131		X
CCB	1.00	1136		X
SL-08MSD	1.00	1142		X
ZZZZZZ	2.00	1148		
ZZZZZZ	2.00	1154		
SL-08MSDL	5.00	1203		X
SL08MSDLA	5.00	1209	112.4	X
CCV	1.00	1215		X
CCB	1.00	1221		X

U.S. EPA - CLP
14
ANALYSIS RUN LOG

Lab Name: NEW ENGLAND TESTING LABORATORY Contract: G & H RD/RA

Lab Code: RI 010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL-18-1

Instrument ID Number: FURNACE-1 Method: P

Start Date: 09/07/94 End Date: 09/07/94

EPA Sample No.	D/F	Time	% R	Analytes																										
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN			
S0	1.00	1033													X															
S3	1.00	1039													X															
S25	1.00	1044													X															
S50	1.00	1050													X															
S100	1.00	1055													X															
ICV	1.00	1105													X															
ICB	1.00	1110													X															
CRA	1.00	1116													X															
PBS	1.00	1121													X															
PBSA	1.00	1127	111.0												X															
ZZZZZZ	1.00	1133													X															
ZZZZZZ	1.00	1138													X															
LCSS	1.00	1144													X															
LCSSA	1.00	1150	110.0												X															
ZZZZZZ	1.00	1155													X															
CCV	1.00	1202													X															
CCB	1.00	1207													X															
SL-6/7	1.00	1213													X															
S-6/7A	1.00	1219	96.0												X															
PBW	1.00	1224													X															
PBWA	1.00	1230	110.5												X															
FIELD BLK	1.00	1236													X															
FIELD BLKA	1.00	1242	105.0												X															
CCV	1.00	1247													X															
CCB	1.00	1253													X															

U.S. EPA - CLP
14
ANALYSIS RUN LOG

Lab Name: NEW ENGLAND TESTING LABORATORY Contract: G & H RD/RA

Lab Code: RI 010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL-18-1

Instrument ID Number: FURNACE-1 Method: F

Start Date: 09/02/94 End Date: 09/02/94

EPA Sample No.	D/F	Time	% R	Analytes																										
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	AN	TL	V	ZN	CN			
S0	1.00	1257																		X									
S5	1.00	1302																		X									
S25	1.00	1306																		X									
S50	1.00	1311																		X									
ICV	1.00	1328																		X									
ICB	1.00	1333																		X									
CRA	1.00	1338																		X									
PBS	1.00	1343																		X									
PBSA	1.00	1348	114.0																	X									
PBW	1.00	1353																		X									
PBWA	1.00	1357	108.0																	X									
LCSS	2.00	1402																		X									
LCSSA	2.00	1407	109.0																	X									
FIELD BLANK	1.00	1412																		X									
FIELD BLKA	1.00	1417	104.0																	X									
CCV	1.00	1424																		X									
CCB	1.00	1428																		X									
SL-04	1.00	1433																		X									
SL-04A	1.00	1438	116.0																	X									
SL-6/7	1.00	1443																		X									
SL-6/7A	1.00	1448	116.7																	X									
SL-08	1.00	1453																		X									
SL-08A	1.00	1458	115.2																	X									
SL-08MS	1.00	1503																		X									
SL-08MSD	1.00	1508																		X									
SL-08MSDA	1.00	1513	104.0																	X									
CCV	1.00	1518																		X									
CCB	1.00	1523																		X									

U.S. EPA - CLP
14
ANALYSIS RUN LOG

Lab Name: NEW ENGLAND TESTING LABORATORY Contract: G & H RD/RA

Lab Code: RI 010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL-18-1

Instrument ID Number: FURNACE-1 Method: F

Start Date: 09/06/94 End Date: 09/06/94

EPA Sample No.	D/F	Time	% R	Analytes
				ALSB SASA BAE BED CDA CRO CUE FBG PMN MGN HGI NK SEG AAL TL V ZN CN
S0	1.00	0948		X
S10	1.00	0954		X
S25	1.00	0959		X
S50	1.00	1004		X
ICV	1.00	1017		X
ICB	1.00	1022		X
CRA	1.00	1027		X
PBS	1.00	1032		X
PBSA	1.00	1038	111.5	X
PBW	1.00	1043		X
PBWA	1.00	1048	100.5	X
LCS	2.00	1054		X
LCSA	2.00	1059	107.0	X
FIELD BLK	1.00	1104		X
FIELD BLKA	1.00	1110	109.5	X
CCV	1.00	1115		X
CCB	1.00	1121		X
SL-04	1.00	1126		X
SL-04A	1.00	1131	113.5	X
SL 6/7	1.00	1137		X
SL 6/7A	1.00	1142	115.5	X
SL-08	1.00	1147		X
SL-08A	1.00	1153	114.5	X
SL-08MS	1.00	1158		X
SL-08MSD	1.00	1204		X
SL-08MSDA	1.00	1209	114.0	X
CCV	1.00	1215		X
CCB	1.00	1220		X

U.S. EPA - CLP
14
ANALYSIS RUN LOG

Lab Name: NEW ENGLAND TESTING LABORATORY Contract: G & H RD/RA

Lab Code: RI 010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL-18-1

Instrument ID Number: COLEMAN-1 Method: CV

Start Date: 09/21/94 End Date: 09/21/94

EPA Sample No.	D/F	Time	% R	Analytes
				ALBSASBABECDCACRCOCUFEPBMGMNHGNIKSEAGNATLVNZNC
S0	1.00	1500		X
S0.5	1.00			X
S1	1.00			X
S5	1.00			X
S10	1.00			X
ICV	1.00			X
ICB	1.00			X
CRA	1.00			X
PBS	1.00			X
LCS	1.00			X
SL-04	1.00			X
SL-6/7	1.00			X
SL-08	1.00			X
SL-08MS	1.00			X
SL-08MSD	1.00			X
CCV	1.00			X
CCB	1.00	1700		X

U.S. EPA - CLP
14
ANALYSIS RUN LOG

Lab Name: NEW ENGLAND TESTING LABORATORY Contract: G & H RD/RA

Lab Code: RI 010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL-18-1

Instrument ID Number: COLEMAN-1 Method: CV

Start Date: 09/16/94 End Date: 09/16/94

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
S0	1.00	1630																X								
S0.5	1.00																	X								
S1	1.00																	X								
S5	1.00																	X								
S10	1.00																	X								
ICV	1.00																	X								
ICB	1.00																	X								
CRA	1.00																	X								
PBW	1.00																	X								
FIELD BLANK	1.00																	X								
CCV	1.00																	X								
CCB	1.00	1730																X								

FORM XIV - IN ILM02.0

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U.S. EPA - CLP
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ANALYSIS RUN LOG

Lab Name: NEW ENGLAND TESTING LABORATORY Contract: G & H RD/RA

Lab Code: RI 010 Case No.: E0831-02 SAS No.: _____ SDG No.: NETL-18-1

Instrument ID Number: SPEC-1 Method: F

Start Date: 09/07/94 End Date: 09/07/94

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	AL	TL	V	ZN	CN
S0	1.00	1300																								X
S5	1.00	1300																								X
S10	1.00	1300																								X
S25	1.00	1300																								X
S50	1.00	1301																								X
S100	1.00	1301																								X
S200	1.00	1301																								X
S300	1.00	1302																								X
ICV	1.00	1320																								X
ICB	1.00	1320																								X
PBW	1.00	1320																								X
FIELD BLK	1.00	1321																								X
SL-04	1.00	1321																								X
SL-6/7	1.00	1321																								X
SL-08	1.00	1322																								X
SL-08MS	1.00	1322																								X
SL-08MSD	1.00	1322																								X
S100	1.00	1330																								X
CCV	1.00	1330																								X
CCB	1.00	1330																								X
CCV	1.00	1331																								X
CCB	1.00	1331																								X
PBW	1.00	1331																								X
S100	1.00	1332																								X
SL-08MSL	10.00	1332																								X
CCV	1.00	1332																								X
CCB	1.00	1333																								X

C: QUARTERLY VERIFICATIONS

U.S. EPA - CLP
10
INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: New England Testing Laboratory Contract: G & H RD/RA

Lab Code: RI 010 Case No.: E0831-02 SAS No.: SDG No.: NETL18-1

ICP ID Number: ICP1 Date: 09/01/94

CV AA ID Number: COLEMAN-1

Furnace AA ID Number: FURNACE-1

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum	308.22		200	38.0	P
Antimony	206.83		60	57.0	P
Arsenic	193.00	BZ	10	2.0	F
Barium	455.40		200	1.0	P
Beryllium	313.04		5	1.0	P
Cadmium	226.50		5	4.0	P
Calcium	317.93		5000	8.0	P
Chromium	267.72		10	3.0	P
Cobalt	228.62		50	6.0	P
Copper	324.75		25	4.0	P
Iron	259.94		100	3.0	P
Lead	282.70	BZ	3	1.0	F
Magnesium	285.21		5000	3.0	P
Manganese	257.61		15	1.0	P
Mercury	253.70		0.2	0.2	CV
Nickel	231.60		40	10.0	P
Potassium	766.49		5000	354.0	P
Selenium	196.00	BZ	5	2.0	F
Silver	328.07		10	4.0	P
Sodium	589.59		5000	98.0	P
Thallium	276.40	BZ	10	1.0	F
Vanadium	292.40		50	3.0	P
Zinc	213.86		20	4.0	P

Comments:

U.S. EPA - CLP
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INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: New England Testing Laboratory Contract: G&H RD/RA

Lab Code: RI 010 Case No.: E0831-02 SAS No.: SDG No.: NETL18-1

ICP ID Number: ICP1 Date: 08/26/94

CV AA ID Number: COLEMAN-1

Furnace AA ID Number: FURNACE-1

PAGE: 2

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum			200		
Antimony			60		
Arsenic			10		
Barium			200		
Beryllium			5		
Cadmium			5		
Calcium			5000		
Chromium			10		
Cobalt			50		
Copper			25		
Iron			100		
Lead	220.35		3	38.0	P
Magnesium			5000		
Manganese			15		
Mercury			0.2		
Nickel			40		
Potassium			5000		
Selenium			5		
Silver			10		
Sodium			5000		
Thallium			10		
Vanadium			50		
Zinc			20		

Comments:

U.S. EPA - CLP

11A

ICP INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: New England Testing Laboratory Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: SDG No.: NETL-18-1

ICP ID Number: ICP-1 Date: 08/26/94

Analyte	Wave-length (nm)	Interelement Correction Factors for: Al	Ca	Fe	Mg	_
Aluminum	308.22					
Antimony	206.83					
Arsenic						
Barium	455.40					
Beryllium	313.04					
Cadmium	226.50					
Calcium	317.93					
Chromium	267.72					
Cobalt	228.62					
Copper	324.75					
Iron	259.94					
Lead	220.35					
Magnesium	285.21					
Manganese	257.61					
Mercury						
Nickel	231.60					
Potassium	766.49					
Selenium						
Silver	328.07					
Sodium	589.59					
Thallium						
Vanadium	292.40					
Zinc	213.86					

Comments:

U.S. EPA - CLP
11B
ICP INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: New England Testing Laboratory Contract: G&H RD/RA

Lab Code: RI010 Case No.: E0831-02 SAS No.: SDG No.: NETL-18-1

ICP ID Number: ICP-1 Date: 08/26/94

Analyte	Wave-length (nm)	Interelement Correction Factors for: _	_	_	_	_
Aluminum	308.22					
Antimony	206.83					
Arsenic						
Barium	455.40					
Beryllium	313.04					
Cadmium	226.50					
Calcium	317.93					
Chromium	267.72					
Cobalt	228.62					
Copper	324.75					
Iron	259.94					
Lead	220.35					
Magnesium	285.21					
Manganese	257.61					
Mercury						
Nickel	231.60					
Potassium	766.49					
Selenium						
Silver	328.07					
Sodium	589.59					
Thallium						
Vanadium	292.40					
Zinc	213.86					

Comments:

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12
ICP LINEAR RANGES (QUARTERLY)

Lab Name: NEW ENGLAND TESTING LABORATORY Contract: G&H RD/RA

Lab Code: RI 010 Case No.: E0831-02 SAS No.: SDG No.: NETL18-1

ICP ID Number: ICP-1 Date: 08/29/94

Analyte	Integ. Time (Sec.)	Concentration (ug/L)	M
Aluminum	3.00	1000000.0	P
Antimony	3.00	50000.0	P
Arsenic			
Barium	3.00	50000.0	P
Beryllium	3.00	50000.0	P
Cadmium	3.00	50000.0	P
Calcium	3.00	2500000.0	P
Chromium	3.00	50000.0	P
Cobalt	3.00	50000.0	P
Copper	3.00	50000.0	P
Iron	3.00	500000.0	P
Lead	3.00	50000.0	P
Magnesium	3.00	1000000.0	P
Manganese	3.00	50000.0	P
Mercury			
Nickel	3.00	50000.0	P
Potassium	3.00	2500000.0	P
Selenium			
Silver	3.00	5000.0	P
Sodium	3.00	1000000.0	P
Thallium			
Vanadium	3.00	50000.0	P
Zinc	3.00	50000.0	P

Comments: